ANNAMACHARYA UNIVERSITY

EXCELLENCE IN EDUCATION; SERVICE TO SOCIETY

(ESTD UNDER AP PRIVATE UNIVERSITIES (ESTABLISHMENT AND REGULATION) ACT, 2016)

RAJAMPET, Annamayya District, A.P – 516126, INDIA.

RESEARCH & DEVELOPMENT CELL

Department wise Publications in Journals– No. of Titles

2024-25

Departments	CE	EEE	MECH	ECE	CSE	AI &DS	AIML	H & S	MBA	MCA	Total
No.of Papers Published in Journals	1	27	12	25	0	1	4	39	9	3	121

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of Civil Engineering

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	Rashid Hasmi, N Krishna Noorthy, S.Thulasi, Paramasamy S, **Dr. D. Gouse** Peera , Rajvardhan Jigyasu	Civil Engineering	development of bio-based polymer composites for sustaianable construction matrials	Journal of Polymer and Composites	13		194-208			2025		YES	ISSN:2321-2810				YES		https://journals.stmijournals.com/jopc/article=2025/view=210293/	https://journals.stmijournals.com/jopc/		

27(J)+32(C)

EEE (2024-25) J

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

List of Journals Published by the faculty during- 2024-25

Department of EEE

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	K. Mary Madhuril, M. Latha, p. Maheswara Rau, Chevala Venkataramanaa, B.V. Sai Thrinath, **Syed Rubeena Bi(6)**	EEE	A Novel Open-Circuit Fault-Tolerant MMC with Multi-carrier P WM Techniques for Solar PV Applications	International Journal of Electrical and Electronics Engineering	12	3	762-768	25	Jul	2024	...	International	2347-470X	...	Scopus	...	...	...	https://doi.org/10.37391/IJEER.120306	...	https://www.scopus.com/sourceid/21101067520	...
2	**Pasala Gopi , N. Chinna Alluraiah** , Pujari Harish Kumar , Mohit Bajaj, Vojtech Blazek, Lukas Prokop (6)	EEE	Improving load frequency controller tuning with rat swarm optimization and porpoising feature detection for enhanced power system stability	Scientific Reports	...	...	...	2	Jul.	2024	...	International	2045-2322	...	Scopus	...	SCIE	...	https://doi.org/10.1038/s41598-024-66007-y	...	https://www.scopus.com/sourceid/21100200805	https://mjl.clarivate.com//search-results?issn=2045-2322&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
3	Ch. Naga Sai Kalyan, **Pasala Gopi**, Shir Ahmad Dost Mohammadi & Mohit Bajaj (5)	EEE	Hybrid fuzzy PID control with HAEFA optimization for simultaneous voltage and frequency stabilization in multi-area diverse source power systems	Cogent Engineering	...	...	1-24	18	Aug.	2024	...	International	2331-1916	...	Scopus	...	ESCI	...	https://doi.org/10.1080/23311916.2024.2391958	...	https://www.scopus.com/sourceid/21100466404	https://mjl.clarivate.com//search-results?issn=2331-1916&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
4	**K.Vijay Bhaskar(1)**	EEE	Modeling and analysis of five phase surface PMSM for,application in electric vehicles	Industrial Engineering journal	17	8	...	...	Aug.	2024	National	...	0970-2555	UGC		...	...	...	...	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101001963	...	...
5	N. Sivarami Reddy, D.V.Rama Murthy,K.Prahlada Rao, **M.Padma Lalitha(4)**	EEE	Pragmatic simultaneous scheduling of machines, AGVs, tool transporter and tools in a multi machine FMS using flower pollination algorithm	European Journal of Industrial Engineering	18	5	728-771	2	Sept.	2024	...	International	1751-5262	...	Scopus	...	SCIE	...	https://doi.org/10.1504/EJIE.2024.140763	...	https://www.scopus.com/sourceid/11200153401	https://mjl.clarivate.com:/mjl//search-results?issn=1751-5254&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=journal-profile-share-this-journal
6	K. Praveen Kumar Reddy, **P. Balachennaiah(2)**	EEE	Integrating Multi-Agent System Control in Hybrid Microgrid System for Energy Management System	SSRG International Journal of Electrical and Electronics Engineering	11	9	224-232	28	Sept.	2024	...	International	2348-8379	...	Scopus	...	...	...	https://doi.org/10.14445/23488379/IJEEE-V11I9P120	...	https://www.scopus.com/sourceid/21101124069	...
7	Suresh Kumar Asadi, **Jinka Sreeranganayakulu**, Sainadh Singh Kshatri, Karimulla Syed Mohammad(4)	EEE	Performance evaluation of PV configu;ations considering degradation rate and hot spots	Indonesian Journal of Electrical Engineering and Computer Science	32	3	1397-1403	...	Sep.	2024	...	International	2502-4760	...	Scopus	...	...	...	https://ijeecs.iaescore.com/index.php/IJEECS	...	https://www.scopus.com/sourceid/21100289500	...
8	**Ganesh Challa**, M. D. Reddy(2)	EEE	Slip angle control-based DTC of open-end winding induction motor drive using dual randomized decoupled PWM for acoustic noise mitigation in EV application	International Journal of Power Electronics and Drive Systems	15	3	1339-1347	...	Sep.	2024	...	International	2088-8694	...	Scopus	...	...	...	http://doi.org/10.11591/ijpeds.v15i2.pp1339-1347	...	https://www.scopus.com/sourceid/21100258382	...

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
9	**Ganesh Challa**, M. D. Reddy(2)	EEE	Acoustic Noise Mitigation in Slip Angle Controlled DTC of Open-End Winding Induction Motor Drive Using Dual Randomized AISPWM for EV Application	International Journal of Electrical and Electronics Research	12	Spl.	18-23	...	Sep.	2024	...	International	2347-470X	...	Scopus	...	...	...	http://doi.org/10.37391/ijeer.120sp04	...	https://www.scopus.com/sourceid/21101067529	...
10	D.Prakash, Mohamed Sathak, **L. Baya Reddy(3)**	EEE	INTEGRATION OF MACHINE LEARNING IN BATTERY MANAGEMENT SYSTEMS FOR LITHIUM-ION CELLS	Industrial Engineering Journal	17	10	13-18	...	Oct	2024	National	...	0970-2555	UGC	...	...	...	...	...	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101001963	...	...
11	**Ganesh Challa**, M. D. Reddy(2)	EEE	Acoustical Noise Mitigation in Slip Angle Controlled DTC of Open-End Winding Induction Motor Drive Using AISPWM Based Triple Randomization Scheme for EV Application	ITEGAM- Journal of Engineering and Technology for Industrial Applications (ITEGAM-JETIA),	10	49	202-210	...	Oct.	2024	...	International	2447-0228	...	Scopus	...	...	...	https://doi.org/10.5935/jetia.v10i49.1275	...	https://www.scopus.com/sourceid/21101175845	...
12	B.Venkatesh,Mudhassir Khan,J.Chinna Babu,Ch.Naga Raju,**R.Madhan Mohan**	EEE	Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT	International Journal of Power and Energy Conversion	15	4	338-351	2	October	2024	...	International	1757-1162		Scopus				https://doi.org/10.1504/IJPEC.2024.141671		https://www.scopus.com/sourceid/21100211767	
13	J. N. Chandra Sekhar , M. Kiran Mayee , Ranjana Nadagoudar , **N. Chinna Alluraiah,** C. Dhanamjayulu , Ravikumar Chinthaginjala , Ravi K., Praveenkumar M., Satyajit Mohanty, and Baseem Khan(10)	EEE	Classification and Comparative Evaluation of Text and Emoji-Based Tweets With Deep Neural Network Models	Journal of Electrical and Computer Engineering	...	...	1-15	12	Nov.	2024	...	International	2090-0155	...	Scopus	...	ESCI	...	https://doi.org/10.1155/2024/9652424	...	https://www.scopus.com/sourceid/21100197510	https://mjl.clarivate.com/search-results?issn=2090-0147&hide_exact_match_filter=true&utm_source=mjl&utm_medium=share_by_link&utm_campaign=search-results-share-this-journal
14	**N Chinna Alluraia**h, V. Nandagopal, P. Veeramanikandan, Godfrey D, S. Meena and G. Brindha(6)	EEE	Comparison of SoC in Ni-MH and Lithium-Ion Battery for E-Vehicle	International Journal of Electrical and Electronics Engineering	12	4	1258-1263	30	Nov.	2024	...	International	2347-470X	...	Scopus	...	...	...	https://doi.org/10.37391/ijeer.120417	...	https://www.scopus.com/sourceid/21101067520	...
15	Rashel Sarkar, Sapnadan Kumar Borthakur, **Ganesh Challa(3)**	EEE	IoT Driven Automation for Street Light Monitoring and Fault Detection	Industrial Engineering journal	17	11	17-22	...	Nov.	2024	National	...	0970-2555	UGC	...	...	...	...	...	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101001963	...	...
16	**P.Bhaskara Prada**,K.V Ramana Naik,L.Sushmitha,A.Venu Kumar,S.Rashmini(5)	EEE	Maximum power point tracking technique for hybrid systems using the trapizoidal rule	Industrial Engineering journal	17	12	...	...	Dec.	2024	National	...	0970-2555	UGC	...	...	...	...	...	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101001963	...	...
17	**Ganesh Challa**, M. D. Reddy(2)	EEE	Slip Angle Controlled DTC of Open-End Winding Induction Motor Drive using Triple Randomized Decoupled PWM Based Acoustic Noise Mitigation for EV Application	PRZEGLĄD ELEKTROTECHNICZNY	1	12	9-13	...	Dec.	2024	...	International	0033-2097	...	Scopus	...	ESCI	...	https://doi.org/10.15199/48.2024.12.03	...	https://www.scopus.com/sourceid/16709	https://mjl.clarivate.com/search-results?issn=0033-2097&hide_exact_match_filter=true&utm_source=mjl&utm_medium=share_by_link&utm_campaign=search-results-share-this-journal

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
18	Chakali Chandrasekhar, Mohammed Mahaboob Basha, Sari Mohan Das, **Oruganti Hemakesavulu,** Mohan Dholvan, Javed Syed(6)	EEE	Pass-Transistor-Enabled Split Input Voltage Level Shifter for Ultra-Low-Power Applications	Micromachines	16	1	1-13	5	Jan.	2025	--	International	2072-666X	--	Scopus	--	SCIE	--	https://doi.org/10.3390/mi16010054	--	https://www.scopus.com/sourceid/21100229176	https://mjl.clarivate.com/search-results?issn=2072-666X&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share_by_link&utm_campaign=search-results-share-this-journal

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
19	Sravanthi C. L.,Chandra Sekhar J. N. ,**N. Chinna Alluraiah** ,Dhanamjayulu C, Harish Kumar Pujari, and Baseem Khan (6)	EEE	An Overview of Remaining Useful Life Prediction of Battery Using Deep Learning and Ensemble Learning Algorithms on Data-Dependent Models	International Transactions on Electrical Energy Systems	...	...	1-28	17	Jan	2025	...	International	2050-7038	...	Scopus	...	SCIE	...	https://doi.org/10.1155/etep/2242749	...	https://www.scopus.com/sourceid/21100241220	https://mjl.clarivate.com/search-results?issn=2050-7038&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
20	Venkata Aniani Kumar G, M. Damodar Reddy, Chilakapati Lenin Babu and **Palepu Suresh Babu(4)**	EEE	PERFORMANCE ASSESSMENT OF A MULTI-VERSE OPTIMIZER BASED SOLAR-PV INVERTER FOR GRID CONNECTED APPLICATIONS	Journal of Engineering and Technology for Industrial Applications	11	51	151-156	...	Feb.	2025	...	International	2447-0228	...	Scopus	...	...	...	https://doi.org/10.5935/jetia.v11i51.1334	...	https://www.scopus.com/sourceid/21101176845	...
21	M.Sreedhar,**A.Hima Bindhu**,V.Veena(3)	EEE	Optimal and Efficient relay coordination approach for multi zone power systems	Industrial Engineering journal	18	2	...	...	Feb.	2025	National	...	0970-2555	UGC	...	...	...	...	...	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101001963	...	...
22	Daruru Sarika, **Palepu Suresh Babu, Pasala Gopi**, Manubolu Damodar Reddy, Suresh Babu Potladurty(5)	EEE	Optimal distributed generator placement for loss reduction using fuzzy and adaptive grey wolf algorithm	International Journal of Applied Power Engineering	14	1	155-162	...	Mar.	2025	...	International	2252-8792	...	Scopus	...	...	...	https://doi.org/10.11591/ijape.v14.i1.pp155-162	...	https://www.scopus.com/sourceid/21101156894	...
23	Pujari Harish Kumar , N. **Chinna Alluraiah , Pasala Gopi** , Mohit Bajaj, Sunil Kumar P ,CH. Naga Sai Kalyan , Vojtech Blazek (7)	EEE	Techno-economic optimization and sensitivity analysis of off-grid hybrid renewable energy systems: A case study for sustainable energy solutions in rural India	Results in Engineering	25	...	1-33	...	Mar.	2025	...	International	2590-1230	...	Scopus	...	ESCI	...	https://doi.org/10.1016/j.rineng.2024.103674	...	https://www.scopus.com/sourceid/21100904991	https://mjl.clarivate.com/search-results?issn=2590-1230&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
24	Hema.S, Sreedevi.S, **Harinath Reddy.K**, Kar.S, Nagarajan.A, & Sengottaian.S(6)	EEE	Hybrid boost-cuk converter with bat-chicken swarm-optimized PI controller for photovoltaic grid systems	The Future Technology (FUTECH) Journal	4	2	11-21	...	May	2025	...	International	2838-0379	...	...	...	...	...	https://fupubco.com/futech/search	...	...	...
25	P. Satheesh Kumar a, M. Pala Prasad Reddy **,S. Muqthiar Ali** , T. Devaraju (4)	EEE	Optimizing energy management strategy for fuel cell hybrid electric vehicles: A hybrid FBPINN-MGO Approach vehicles	Renewable Energy	253		...	...	May	2025	...	International	1879-0682	...	Scopus	...	...	...	https://doi.org/10.1016/j.renene.2025.123159	...	https://www.scopus.com/sourceid/27568	...
26	Pujari Harish Kumar, Gayathri Raju, Mohit Bajaj, **Nallolla Chinna Alluraiah, Pasala Gopi** , Sunil Kumar Pulumithi, Reshma Gopi Remabhai, Reshma Gopi and Ievgen Zaitsev(9)	EEE	Integrated thermal and battery management for electric vehicles: Experimental validation and simulation-based optimization of lithium-ion batteries	Energy Exploration and Exploitation	...	...	1-59	...	May	2025	...	International	0144-5987	...	Scopus	...	SCIE	...	https://doi.org/10.1177/01445987251337094	...	https://www.scopus.com/sourceid/29383	https://mjl.clarivate.com/search-results?issn=0144-5987&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
27	Dr. P.R. Sudha Rani, Dr. S. Ajit, Dr. M. Shunmugasundaram, Dr. S. Gangadharan, **Swetha Mareddy**, Dr. R. Senthamil Selvan, Dr. M. Prabha(7)	EEE	Impact of Forecast Time-Step on PV Production Accuracy Using Machine Learning for Micro-Grid Efficiency	Metallurgical and Materials Engineering	31	1	511-520	...	...	2025	National	...	2217-8961	...	No	...	...	...	https://metall-mater-eng.com/index.php/home/article/view/1276	...	...	...

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of Mechanical Engineering

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication
1	Dr. B Venkatesh	Mechanical Engineering	Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT	International Journal of Power and Energy Conversion	15	4	338-351	2	october	2024
2	N Deepthi	Mechanical Engineering	Optimization of Process Parameters In Wire-Edm for Stainless steel -304 By Using Grey-Relational Analysis	Journal of Physics: Conference Series	2837	1	1	17	october	2024
3	Dr. A. Hematha Kumar	Mechanical Engineering	Deploying Healthcare Monitoring System For Elderly Patient Care using IoT and Neural Network Techniques	IEEE			1179-1184	29	october	2024
4	Dr. Kishorekumar Nandyala	Mechanical Engineering	Smart Materials Revolutionizing Automotive Technology: Applications, Challenges, and Future Directions	International Journal of Engineering Trends and Technology	72	8	353-363		August	2024
5	Dr. N.Sivarami Reddy	Mechanical Engineering	Pragmatic simultaneous scheduling of machines, AGVs, tool transporter and tools in a multi machine FMS using flower pollination algorithm	European Journal of Industrial Engineering	18	5	728-771	2	september	2024
6	Mr N. Ragunath	Mechanical Engineering	Image Pattern Recognition With An Improvised Deep Learning Regression Technique	ICTACT Journal On Image And Video Processing	15	2	3425-3432		November	2024
7	Dr. B Venkatesh	Mechanical Engineering	Early Enhancements within IoT Technology Integration for Ecological, Security, and Economic Auditing in Underground Mines	IEEE			317-327	11	Febraury	2025
8	C. Thirupathaiah	Mechanical Engineering	ONNS: Experimental Evaluation of Human Smile Recognition Based on Image Processing Assisted Optimized Neural Network Strategy	IEEE			1-6	12	March	2025

9	N. Nagaraju	Mechanical Engineering	Experimental Procedure to Develop an IoT Based Smart Home Automation System Using Intelligent Sensors Association	IEEE			1-6	12	March	2025
10	S. Mahaboob Khan	Mechanical Engineering	Empirical Evaluation of AI Based Oral Cancer Identification Scheme Using Learning Assisted Medical Image Processing Scheme	IEEE			1-6	12	March	2025
11	Gunti Amarnath	Mechanical Engineering	Experimental investigation on vibration characteristics and damping factor of coir fiber reinforced polyester composite material	Discover Applied Sciences	7		465	7	May	2025
12	N. Nagaraju	Mechanical Engineering	Experimental Analysis of Improved AODV Protocol with Automatic Route Guidance Method in Vehicular Communication	IEEE			1-6	20	June	2025

I/c

3/8/7

12 (J)

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of ECE

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	J. HimaBindhu; Shaik. Karimullah; S. Fahimuddin; A. Sushma; K.Viswanath Reddy; E. Vijay Simha	ECE	Enhancing Remote Sensing Image Quality with Advanced ADMM-Based Stripe Noise Removal	IEEE Xplore	—	—	1–6	31	Mar	2025	—	Yes	2768-0576	—	Yes	—	—	—	https://doi.org/10.1109/ICCECE61355.2025.10940410	—	https://doi.org/10.1109/ICCECE61355.2025.10940410	
2	Shaik Karimullah; Shaik Fahimuddin; T N Ranganadham; P. Hariobulesu; R.Soma Sekhar; C.Raviteja Reddy	ECE	Dynamic AP-UE Association and Power Allocation in Sparse LSFD for Energy-Constrained Networks	IEEE Xplore	—	—	1–10	31	Mar	2025	—	Yes	2768-0576	—	Yes	—	—	—	https://www.researchgate.net/publication/390360810_Dynamic_AP-UE_Association_and_Power_Allocation_in_Sparse_LSFD_for_Energy-Constrained_Networks	—	https://www.researchgate.net/publication/390360810_Dynamic_AP-UE_Association_and_Power_Allocation_in_Sparse_LSFD_for_Energy-Constrained_Networks	
3	Umakanth B., Fahimuddin Shaik, Shaik Karimullah, Tejaswini U., Sriteja A., Kumar S., Srinivasulu P	ECE	Innovative Lung Cancer Diagnosis Using the AlReM-Net Hybrid Approach	IEEE Xplore	—	—	1–6	31	Mar	2025	—	Yes	2768-0576	—	Yes	—	—	—	https://doi.org/10.1109/ICCECE61355.2025.10940133	—	https://doi.org/10.1109/ICCECE61355.2025.10940133	
4	Shaik Karimullah, S. Fahimuddin, R. Madhan Mohan, Muddanalali Gari Aparna, Pabbathi Geethesh, Bhumi Reddy Bhanu Teja	ECE	Optimization of Cluster Head Selection Using Bacterial Foraging Algorithm for Energy-Efficient Routing in Wireless Body Area Networks	IEEE Xplore	—	—	1–8	31	Mar	2025	—	Yes	2768-0576	—	Yes	—	—	—	https://doi.org/10.1109/ICCECE61355.2025.10940516		https://doi.org/10.1109/ICCECE61355.2025.10940516	
5	M. Venkata Dasu, K. Purushottam, M. Sravani, A. Pavan Kumar, T. Siva Kumar	ECE	Deep Learning Based Approach for the Detection of Diabetic Retinopathy and Glaucoma	Springer	236	-	231-144	31	Mar	2025	-	Yes	1867-822X	-	Yes	-	-	-	http://dx.doi.org/10.1007/978-981-96-0451-7_17	-	http://dx.doi.org/10.1007/978-981-96-0451-7_17	
6	C. Venkatesh, L. Sivayamini, M. Venkata Dasu, D. Sreeranga Vyshnavi, D. Yasaswini, D. Sreenivasulu, G. Suryashankaravaraprasad, Ch. Nagaraju	ECE	Cardiac Diagnosis System For Heart Diseases Classification Based on Deep Learning and Optimization Strategies Using ECG Signals	IEEE Xplore	–	–	1–8	25	March	2025		Yes	2768-0576		Yes				https://doi.org/10.1109/ICCECE61355.2025.10940447		https://doi.org/10.1109/ICCECE61355.2025.10940447	
7	K. Shankar, K. Raj Mohan, S. Gnanamurugan, S. Fayaz Begum, M. Maruthi Prasad, Y. Pavan Kumar Reddy	ECE	IoT-Based Delivery Robot with Theft Detection for Food and Goods Supply	E3S Web of Conferences	619	–	–	12	Mar	2025		Yes	2267-1242		Yes		✓					https://doi.org/10.1051/e3sconf/202561903018
8	Tirumalaiah Gurram, Gayathri Vallam, Chandrakanth Maddimani, Anusha	ECE	Automated Soft Drinks Dispensing System Using Pneumatic Gripper Robot Arm	AIP Publishing	3237	1	_	28	Feb	2025	-	Yes	1551-7616	-	Yes	-	-	-	https://doi.org/10.1063/5.0247088		https://doi.org/10.1063/5.0247088	
9	Kalchatla Riyazuddin, Pulluru Vanitha, Gollapinni Sreenivasa Sarma, Ankala Surekha, Bathini Sunil Kumar, Alladu Vishnuvardhan Reddy	ECE	Exploring 6G Wireless Networks: Millimeter-Wave Revolution and Mixed-Carrier Communication for Enhanced Spectrum Efficiency	EAI Cognitive Computing and Cyber Physical Systems	597	-	425-437	9	Feb	2025	-	Yes	1867-8211	-	Yes	-	-	-	https://doi.org/10.1007/978-3-031-77075-3_34	-	https://doi.org/10.1007/978-3-031-77075-3_34	

10	Kasigari Prasad, Gandlapenta Rajeev, Mallipeddi Sai Vignesh, Kurmagiri Prathap, Eraganaboina Prakash	ECE	Design and Modelling of Frequency Reconfigurable Antenna by Using Bow-Tie Geometry	Cognitive Computing and Cyber Physical Systems (Springer	597	–	XXV, 455	8	Feb	2025		Yes	1867-8211		Yes			https://doi.org/10.1007/978-3-031-77075-3_33		https://doi.org/10.1007/978-3-031-77075-3_33	
11	Asif Hussain Shaik, Shaik Karimullah, Mudassir Khan, Fahimuddin Shaik	ECE	Comprehensive Methodology to the Detection and Classification of Emotion in Human Face using	Fusion: Practice and Applications (FPA)	19	1	10–22	5	Feb	2025		Yes	2692-4048		Yes			http://dx.doi.org/10.54216/FPA.190102		http://dx.doi.org/10.54216/FPA.190102	
12	Ajmeera Kiran, Alwalid Bashier Gism Elseed Ahmed, Mudassir Khan, J. Chinna Babu, B. P. Santosh Kumar	ECE	An Efficient method for Privacy Protection in Big Data Analytics Using Oppositional Fruit Fly Algorithm	Indonesian Journal of Electrical Engineering and Computer Science	37	1	670–679	–	Jan	2025		Yes	2502-4752		Yes			http://doi.org/10.11591/ijeecs.v37.i1.pp670-679		http://doi.org/10.11591/ijeecs.v37.i1.pp670-679	
13	Shaik Asif Hussain, Shaik Karimullah, Fahimuddin Shaik, Syed Javeed Basha	ECE	Deep Learning-Based Congestion Control in VLSI for Placement and Routing	Journal of Theoretical and Applied Information Technology	102	–	8898–8906	31	Dec	2024		Yes	1817-3195		Yes			https://www.jatit.org/volumes/Vol102No24/6Vol102No24.pdf		https://www.jatit.org/volumes/Vol102No24/6Vol102No24.pdf	
14	Deepthy Mary Alex, Kalpana Chowdary M, Hanan Abdullah	ECE	DANNET: Deep Attention Neural Network for Efficient Ear	PeerJ Computer Science	–	–	–	18	Dec	2024		Yes	2167-8359		Yes		✓				https://peerj.com/articles/cs-2603/
15	Ganesh Chandrasekaran, Mandalapu Kalpana Chowdary, Jyothi Chinna Babu, Ajmeera Kiran, Kotthuru Anil Kumar, Seifedine Kadry	ECE	Deep Learning-Based Attention Models for Sarcasm Detection in Text	Int. J. of Electrical and Computer Engineering	14	6	6786–6796		Dec	2024		Yes	2088-8708		Yes			http://doi.org/10.11591/ijece.v14i6.pp6786-6796		http://doi.org/10.11591/ijece.v14i6.pp6786-6796	
16	J. Chinna Babu, Mudassir Khan, K. Nandini, E. Reddysekhar, G. Pavan Kumar, B. Sathwika	ECE	IoT-Based Smart Blood Bank Services: A Review	IEEE Xplore	–	–	1–6	4	Nov	2024		Yes	2473-7674		Yes			https://doi.org/10.1109/ICCCNT61001.2024.10724178		https://doi.org/10.1109/ICCCNT61001.2024.10724178	
17	Peddapullaiahgari Hariobulesu Fahimuddin Shaik	ECE	Exploring the Landscape of Diabetic Retinopathy Diagnosis: Insights from Extensive Literature Review and Preliminary Fundus Image Analysis	IEEE Xplore	–	–	1–5	4	Nov	2024		Yes	2473-7674		Yes			https://doi.org/10.1109/ICCCNT61001.2024.10725492		https://doi.org/10.1109/ICCCNT61001.2024.10725492	
18	Shaik Karimullah, Fahimuddin Shaik, Mudassir Khan, Bayan Alabduallah, Abrar Almjally	ECE	An Integrated Method for Detecting Lung Cancer via CT Scanning via Optimization, Deep Learning, and IoT Data Transmission	Frontiers in Oncology	14	–	1–15	7	Oct	2024		Yes	2234-943X		Yes		✓	http://dx.doi.org/10.3389/fonc.2024.1435041		http://dx.doi.org/10.3389/fonc.2024.1435041	
19	B. Venkatesh, Mudassir Khan, J. Chinna Babu, C.H. Nagaraju, R. Madhan Mohan	ECE	Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT	IJPEC - Inderscience	15	4	338–351	2	Oct	2024		Yes	1757-1154		Yes			https://doi.org/10.1504/IJPEC.2024.141871		https://doi.org/10.1504/IJPEC.2024.141871	
20	Shaik Karimullah, Ali H. Wheeb, Fahimuddin Shaik	ECE	Detection and Classification of Brain Tumor from MRI and CT Images using Harmony Search Optimization and Deep Learning	Journal of Artificial Intelligence Research & Advances	11	3	31-49	5	Sep	2024		Yes	2305-6720		Yes			https://www.researchgate.net/publication/384678529_Detection_and_Classification_of_Brain_Tumor_from_MRI_And_CT_Images_using_Harmony_Search_Optimiz		https://www.researchgate.net/publication/384678529_Detection_and_Classification_of_Brain_Tumor_from_MRI_And_CT_Images_using_Harmony_Search_Optimization_and_Deep_Learning	

21	Prasad Kasigari, Gayathri Kamasani, Gopisriya Kavanoor, Baba Shareef Muntimadugu, Abubakar Shaik	ECE	Investigation of Quantum Antenna Process for Advanced Wireless Communication Systems by Implementing Quantum Key Distribution Algorithms	In: Rajakumar G (editor). Proceedings of 6th International Conference on Smart	19	–	103–120	6	Aug	2024		Yes	2515-1762		Yes				https://doi.org/10.29007/7cwl		https://doi.org/10.29007/7cwl	
22	K. Prasad, V. Veera Swapna, M. Swetha, S. Mohan Krishna, C. Varakumar	ECE	Modelling and Investigation of Multiband Antenna for IRNSS and Satellite Communications	Proc. of 6th Intl Conf. on Smart Systems and Inventive	19	–	121–133	6	Aug	2024		Yes	2515-1762		Yes				https://easychair.org/publications/paper/88nW/open		https://easychair.org/publications/paper/88nW/open	
23	B. Praveen Kumar, Gopisetty Ramesh, K. Naga Sankar Reddy, P. Hari Obulesu	ECE	The channel estimation for MIMO-OFDM systems using discrete wavelet transform	AIP Conference Proceedings	3028	1	02003-1 to 020003-5	8	Jul	2024	-	Yes	1551-7616	-	Yes	-	-	-	https://doi.org/10.1063/5.0215298	-	https://doi.org/10.1063/5.0215298	
24	Shaik Karimullah, Mohammed Mahaboob Basha, Fahimuddin Shaik, Srinivasulu Gundala, Anca Stan, Ovidiu Petru	ECE	Advanced Brain Tumor Diagnosis using Haralick Texture Features and Multiclass SVM in MRI Imaging	IEEE Xplore	–	–	1–6	14	June	2024		Yes	1844-7872		Yes				https://doi.org/10.1109/AQTR61889.2024.10554101		https://doi.org/10.1109/AQTR61889.2024.10554101	
25	Prasad K	ECE	AI-Driven Optimization of IoT Antenna Design for Enhancing Efficiency, Adaptability, and Performance	Journal of Harbin Engineering University	45	–	1–8	–	June	2024		Yes	1006-7043		Yes				https://harbinengineeringjournal.com/index.php/journal/article/view/3079		https://harbinengineeringjournal.com/index.php/journal/article/view/3079	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of AI&DS

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	S. Murugesan; S. Ashok Kumar; K. Tamilselvi; T. Thyagarajan	AI&DS	PRIVACY-PRESERVING TECHNIQUES IN BIG DATA AND INFORMATION SECURITY	ICTACT Journal on Communication Technology			3320–3324	Sep-24	September	2024		International	ISSN: 2229-6948 (Online)	UGC	DOI: 10.21917/ijct.2024.0... (final digits unclear)			YES		https://journals.stmjournals.com/jops/article=2025/view=210293/	https://journals.stmjournals.com/jops/	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of Artificial Intelligence and Machine Learning

S.No	Name of the Author	Department	Designation	First Author	Corresponding Author	Co-Author	Name of the Institute Affiliated	Title of the paper	Name of the Journal	Volume	Issue No.	Page Numbers (Ex: 102 To 110)	Date of Publication (MM/YYYY)	National / International	ISSN / ISBN	Indexed in scopus	Indexed in SCI/SCIE of Wos	Indexed in otherthan SCI/SCIE of Wos	Peer Reviewed	Journal Link (Scopus/ WoS/ Peer Reviewed)	DOI	Paper URL Link	Impact factor of Journal	Journal Citation Score	Category of Journal (Q1, Q2, Q3 and Q4)
1	Mrs. Swarna Surekha	AI & ML	Assistant Professor			Swarna Surekha	AITS	Advancing analog design: strategies and techniques for Emerging technology platforms	ICTACT Journal on Microelectronics	10	2	1800 to 1806	07-2024	International	2395-1680				Yes		https://doi.org/10.21917/ijme.2024.0311	https://journals.indexcopernicus.com/api/file/viewByFileId/2077323			
2	Mrs. Swarna Surekha	AI & ML	Assistant Professor	Swarna Surekha			AITS	Data-Driven Decision-Making in Healthcare Management: The Role of Computer Science	African Journal of Biological Sciences	6	12	5284-5297	07-2024	International	2663-2187	Scopus				https://www.scopus.com/sources.uri	10.48047/AFJBS.6.12.2024.5284-5297	https://www.afjbs.com/uploads/paper/f7e35ae5a7598f71c44c4d1bbcc480b7.pdf			Q4
3	Mrs. Swarna Surekha	AI & ML	Assistant Professor	Swarna Surekha			AITS	MATHEMATICAL MODELING OF CHEMICAL PROCESSES IN ANIMAL PHYSIOLOGY: A COMPUTATIONAL APPROACH	Bulletin of Pure and Applied Sciences Zoology (Animal Science),	43B	2s	27 to 42	12-2024	International	2320-3188				Yes			https://bpasjournals.com/zoology/index.php/journal/article/view/211			
4	Dr.T.Harikrishna	AI & ML	Associate Professor			Dr.T.Harikrishna	AITS	GeoAgriGuard : AI-Driven Pest and Disease Management with Remote Sensing for Global Food Security	Springer Nature	8	6	409 to 422	01-2025	International	2520-8209	Scopus				https://www.scimagojr.com/journalsearch.php?q=21100391500&tip=sid&clean=0	https://doi.org/10.1007/s41976-025-00192-w	https://link.springer.com/article/10.1007/s41976-025-00192-w			Q2

T. Krishna
30/7/2025
AIML – R&D - Co-ordinator

30/7/2025
Head of the Department
Artificial Intelligence & Machine Learning
ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES
(Autonomous)
RAJAMPET-516126.

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of H&S

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	Venkateswara Raju Konduru, Ravi Babu Narahari, Chandra Reddy Poli, Veera Sankar Battala, Mohana Ramana Ravuri, Sridevi Dandu, Madhumohana Raju Addepalli Balaraju	H & S	MHD Flow and Heat Transfer of Carreau Fluid With Radiation and Heat Source Effect.	Journal of Advanced Research in Numerical Heat Transfer	26	1	142-155		November	2024		International	2735-0142		Scopus				https://doi.org/10.37934/arnht.26.1.142155		https://www.scopus.com/sourceid/21101169023	
2	K Jyothi, Bhajantri Venkateswarlu, P Chandra Reddy, Raghunath Kodi, Damodara Reddy Annapureddy	H & S	Neural network-driven analysis of MHD boundary layer flow and heat transfer in Sisko nanofluids.	Multiscale and Multidisciplinary Modeling, Experiments and Design	8	6	1-15		May	2025		International	2520-8179		Scopus				https://link.springer.com/article/10.1007/s41939-025-00877-1		https://www.scopus.com/sourceid/21101022436	
3	Katta Vijayakumar , Panuganti China Sattilingam Devara , and Saurabh Yadav	H & S	Investigations on Stubble-Burning Aerosols over a Rural Location Using Ground-Based, Model, and Spaceborne Data	atmosphere	15	1383	1-14	17	November	2024		International	2073-4433				SCIE		https://doi.org/10.3390/atmos15111383		https://www.scopus.com/sourceid/15838	
4	Kummara Madhusudana Rao, Rajavaram Ramaraghavulu, Deepti Kolli, S. Harinath Babu, S. V. Prabhakar Vattikuti and Mallesham Godumala	H & S	Recent breakthroughs in through-space charge transfer in p-stacked molecules as thermally activated delayed fluorescent emitters for OLED applications	Journal of Materials Chemistry C	13		3091-3122		January	2025		International	2050-7534				SCIE		http://doi.org/10.1039/d4tc05181e			https://mjl.clarivate.com://search-results?issn=2050-7526&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
5	Dr. M. Naga Raja Kumar, P. Vijaya Kumar, Dr. S. Satyam	H & S	Enhancing Vocabulary Acquisition For Tertiary Level Learners: Strategies For Effective Second Language Learning	International Journal of Creative Research Thoughts (IJCRT)	13	3	959-963		March	2025		International	2320-2882					Others				
6	N. Hari Chandana	H & S	Moral Foundations In The Modern World: Exploring	International Journal of Creative	13	2	h592-h594		Febraury	2025		International	2320-2882					Others				
7	P. Suneetha Naidu and Dr. M. Praveena	H & S	Re-Imagining India: A Critical Analysis of Javed Akhtar's 2017 TED Talk	INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY	9	2	138-140		Febraury	2025		International	2456-6683					Others	https://ijrcs.org/re-imagining-india-a-critical-analysis-of-javed-akhtars-2017-ted-talk/#:~:text=In%20this%20talk%2C%20Akhtar%2C%20explored,define%20the%20nation's%20democratic%20ethos.			

8	Dr. L. Obulapathi	H&S	Effect of sputter power on red shifted optoelectronic properties in nmagnetron sputtered Ag/ZnO thin films	Journal of vacuum science & Technology B	42		1-9	26	August	2024		International	2166-2746				SCIE		https://doi.org/10.1116/6.0003813			https://mjl.clarivate.com://search-results?issn=2166-2746&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
9	Rekha Satish, Buchanahalli Thimmaiah Raju, Mummadisetty Umamaheswar,Vijayakumar Varma Sibyala, Charankumar Ganteda, Assmaa Abd-Elmonem ,Fayza Abdel Aziz ElSeabee, Neissrien Alhubieshi, Mohamed R. Eid ,Wasim Jamshed, Hijaz Ahmad	H&S	Case study of radiation absorptive and chemical reactive impacts on unsteady MHD natural convection flowing of Cu-Al2O3/H2O hybridized nanofluid	Case Studies in Thermal Engineering	64		1-15	24	November	2024		International	2214-157X				SCIE		https://doi.org/10.1016/j.csite.2024.105536			https://mjl.clarivate.com://search-results?issn=2214-157X&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
10	Dr. M. Praveena	H&S	Necessity of Managerial Communication Course for MBA Students	International Journal of Science, Architecture, Technology, and Environment	2	5	1555-15559		May	2025		International	3048-8222					Others	https://ijsate.com/wp-content/uploads/2025/05/V2I5P113_IJSATE0525128.pdf			
11	Lingam Lakshmi Devi, Boggala Sreenivasulu and Kothakula Keerthi	H&S	Spectroscopic Properties of Dy3+-Doped Phosphors Derived fromAgricultural Waste for Solid State Lighting Applications	African journal of Biomedical Research	27		2990-2995		October	2024		International			scopus				https://doi.org/10.53555/AJBR.v27i3.7880		https://www.scopus.com/sourceid/19700175149	
12	Kothakula Keerthi, Boggala Sreenivasulu, Kandukuri Uma devi, Lingam LakshmiDevi	H&S	Biological Applications of Nano C-BN Synthesised by Using BallMilling Method	African journal of Biomedical Research	27		2996-2999		November	2024		International			scopus				https://doi.org/10.53555/AJBR.v27i3.7881		https://www.scopus.com/sourceid/19700175149	
13	Mr. P. Vijaya Kumar	H&S	Key Elements influencing th	Literary Vibes, An Int	14	1	11-Aug		January,	2025		International	2320-6896					Others	doi: 10.5281/zenodo.14898288			
14	Mr. P. Vijaya Kumar	H&S	"Ai-Driven Language Learni	INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY	13	6			JUNE	2025		International	2320-2882					Others				
15	L.Padmavathi, Sannu venkateswarlu, Punith Kumar D.N, S.V.K.Varma, Charankumar Ganteda, Muhammad Amer Quershi, Kamel Guedri, Syed M.Hussain, Abdularazak H.Almaliki, Mustafa Bayram	H&S	Optimization of 3D hydromagnetic Casson fluid flow over a permeable stretching surface using RSM and AI	Journal of Radiation Research and Applied Sciences	18		15-Jan		JUNE	2025		International	1687-8507				SCIE		https://www.sciencedirect.com/science/article/pii/S1687850725002663			https://mjl.clarivate.com://search-results?issn=1687-8507&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
16	L. Padmavathi , S.Geethan Kumar , Charankumar Ganteda , S.V.K. Varma , E. Gouthami ,G. Jayalalitha , B.Murali Mohan Rao , Vediyappan Govindan , Busayamas Pimpunchat ,Haewon Byeon j	H&S	Numerical study on thermal radiation and chemical reaction impacts on Prandtl nanofluid flow over a bilinear stretching sheet with heat generation and absorption: Response surface methodology	Nano-Structures & Nano-Objects	41		1-18		Febraury	2025		International	2352-507X		scopus				https://doi.org/10.1016/j.nanoso.2025.101446		https://www.scopus.com/sourceid/21100416140	

17	Dr.SATYAM	H&S	History and Diaspora in the Study of Arundhati Roy's The God of Small Things.	International Journal of Creative Research Thoughts (IJCRT)	13	3	926-933		March	2025		International	2320-2882					Others	:http://www.ijcrt.org/papers/IJCRT2503564.pdf			
18	Sreenivasa Kumar Godlaveeti, N Rajesh, Mohamed Ouladsmane, Ahmed M Aljuwayid, K Riazunnisa, Shaik Mohammed Azharuddin, Rajababu Chintaparty	Rajababu Chintaparty	Structural, Optical, and Antibacterial Properties of NiO and BaO doped NiO-Prepared by Co-precipitation Method	BioNanoScience	15	2	;1-10	4	APRIL	2025		International	2191-1630				ESCI		https://doi.org/10.1007/s12668-025-01914-6			https://mjl.clarivate.com://searchresults?issn=20518153&hide_exact_match_fl=true&utm_source=mjl&utm_medium=sharebylink&utm_campaign=search-results-share-this-journal
19	Ammar M Tighezza, Sreenivasa Kumar Godlaveeti, Charan Kuchi, Sreedevi Gedi, Ramamanohar Reddy Nagireddy, Rajababu Chintaparty	Rajababu Chintaparty	Dielectric and Electrochemical Properties of BaO-Doped NiO: A Study on Optimized Composition for Enhanced Performance	ECS Journal of Solid State Science and Technology	14	5	;053001	6	MAY	2025		International	2162-8777				SCIE		https://doi.org/10.1149/2162-8777/adcfc3			https://mjl.clarivate.com://searchresults?issn=21628769&hide_exact_match_fl=true&utm_source=mjl&utm_medium=sharebylink&utm_campaign=search-results-share-this-journal
20	Sreenivasa Kumar Godlaveeti, Adel El-marghany, Ramamanohar Reddy Nagireddy, Sreedevi Gedi, Rajababu Chintaparty	Rajababu Chintaparty	Comparative study of electrochemical supercapacitor performance Among various nickel phases: Hydroxide, oxide, and sulfide	Ceramics International	51	15	;20620-20627	30	MAY	2025		International	0272-8842				SCIE		https://doi.org/10.1016/j.ceramint.2025.02.229			https://mjl.clarivate.com://search-results?issn=02728842&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
21	VIJAY KUMAR H, ASHISH K, C SRINIVASULU	H&S	A RANDOMIZED APPROACH COMBINING Q AND KRYLOV SUBSPACE METHODS FOR NONSYMMETRIC LINEAR SYSTEMS	Industrial Engineering Journal	18	2			February	2025		International						Others				
22	K. Kumaraswamy Naidu, D. Harish Babu, P.V. Satya Narayana, S. Harinath Reddy, A.M. Rashad	H&S	Computational analysis for magnetized radiative Jeffrey nanofluid (Au/ C2H6O2) flow in a rotating system with activation energy	Indian Journal of Chemical Technology	31	4	593-603	2	July	2024		International	0971-457X		scopus		SCIE		https://doi.org/10.56042/ijct.v31i4.7530		https://www.scopus.com/sourceid/24098	https://mjl.clarivate.com://search-results?issn=0971-457X&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
23	D Harish Babu, K Kumaraswamy Naidu, B Hari babu, K. Venkatesawara Raju, S Harinath Reddy, P.V Satya Narayana	H&S	Numerical and neural network approaches to heat transfer flow in MHD dissipative ternary fluid through Darcy-Forchheimer permeable channel	Case Studies in Thermal Engineering	60				August	2024		International	2214-157X		scopus		SCIE		https://doi.org/10.1016/j.csite.2024.104777		https://www.scopus.com/sourceid/21100262580	https://mjl.clarivate.com://search-results?issn=2214-157X&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal

24	Y. V. Seshagiri Rao, Dr. Y. Satheesh Kumar Reddy, Dr. V. Vishnuvardhan, D. Chenna Kesavaiah, Dr. D. Raju	H&S	Chemical Reaction and Soret Effects on Mhd Free Convection Flow Past an Accelerated Vertical Plate Through a Porous Medium with Heat Source	Communications on Applied Nonlinear Analysis	32	3	846 - 864		April	2025		International	1074-133X		scopus				https://doi.org/10.52783/cana.v32.4532		https://www.scopus.com/sourceid/11100153313	
25	Dr. ANOOP R MARKANDE Dr. MOULIKA BHATTACHARYYA JANAGAMSETTY SIVAKRISHNA	H&S	OPTIMISING THE DECARBOXYLATION OF ANACARDIC ACID BY EXPLORING THE TEMPERATURE EFFECTS	Industrial Engineering Journal	17	12			December	2024		International						Others				
26	BS. PATIL B. VAHIDA RAHIMAN BHANU	H&S	EXPLORING NETWORK STABILITY THROUGH DOMINATION AND SIGN DOMINATION METRICS IN GRAPH THEORY	Industrial Engineering Journal	18	2			February	2025		International						Others				
27	Mary Jasmin Nerella, J. Venkatesh, Rajesh Kumar, Arul Johnson. A, R.Ramaswamy, S. Mohammed Ghouse	H&S	Energy Storage Optimization in Electric Vehicles for improving vehicles to grid Performance	E3S Web of Conferences ICSGET 2025	619		1009	12	March	2025		International	2267-1242		scopus				https://doi.org/10.1051/e3sconf/202561901009		https://www.scopus.com/sourceid/21100795900	
28	M. Mallikarjuna Rao, Sathish Mohan Botsa, T. Prabhakara Rao, Srinivasa Rao Goddu, C. Vijayasanthi	H&S	A comprehensive review on agricultural waste production and onsite management with circular economy opportunities	Discover Sustainability	5		288	27	September	2024		International	2662-9984		scopus		ESCI		https://doi.org/10.1007/s43621-024-00492-z		https://www.scopus.com/sourceid/21101138720	https://mjl.clarivate.com://search-results?issn=2662-9984&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
29	C Vijaya Shanthi	H&S	The Role of Organic Chemistry in E-Waste Management Systems: Innovations, Challenges, and Opportunities	INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY	9	1	39-41		January	2025		International	2456-6683					Others				
30	S Reshma	H&S	AN OVERVIEW OF CURRENT DEVELOPMENTS AND VIEWPOINTS ON BACTERIAL BIOFLOCCULANTS	Industrial Engineering Journal	17	10			October	2024		International						Others				
31	SIRENGO JOHN Dr. M. PARVATHI	H&S	MATHEMATICAL MODELLING OF PREVENTION MEASURES OF CONTAGIOUS DISEASES GLOBALLY	Industrial Engineering Journal	17	7			July	2024		International						Others				
32	Sreenivasa Kumar Godlaveeti, Adel El-marghany, M. Parandamaiah, Madhusudhana Rao Nasina, Sreedevi Gedi, Ramamanohar Reddy Nagireddy, G. Chinna venkata Subbaiah, Rajababu Chintaparty	H&S	Low-Temperature Synthesis of NiO Structures: Tailoring Morphology for Enhanced Dielectric Performance	ECS Journal of Solid State Science and Technology	14	2	23008	12	February	2025		International	2162-8777				SCIE		https://doi.org/10.1149/2162-8777/adb20f			https://mjl.clarivate.com://search-results?issn=2162-8769&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal

33	Shaik Mohammed Ibrahim, Bommanna Lavanya, Gurram Dharmaiah, Thummala Sankar Reddy, Parakapali Roja	H&S	Melting Heat Transfer Effects on MHD Chemically Thermally Radiative Micropolar Fluid Flow towards Stretching Exponentially Sheet with Heat Sink/Source	CFD Letters	17	7	113-129	31	January	2025		International	2180-1363		scopus				https://doi.org/10.37934/cfdl.17.7.113129		https://www.scopus.com/sourceid/21100198926	
34	Iliyas Ali Shaik, Kumbala Suneel Kumar,G.V. Narmatha, G. Chengaiah	H&S	Evaluating Digital Learning Tools: A Structured Approach for English Language Classrooms	Library Progress International	44	3	17219-17228		December	2024		International	2320 317X		scopus						https://www.scopus.com/sourceid/21101204534	
35	M. Lakshmi Narasimha, P. Chitti Babu	H&S	Mothers, Daughters and the sea: A feminist reading of Karuthamma and Chakki in Chemmeen	International journal of research culture society	9	39	134-137	28	February	2025		International	2456-6683					Others				
36	M. Thirunavukkarasu, S. Sathish, V. Rahul, R. Vinoth, S. Ram, O. Akbar Basha	H&S	Hybrid adaptive network-based fuzzy inference system Model for Biodiesel Production in Renewable System	E3S Web of Conferences	619		1010	12	March	2025		International	2267-1242		scopus				https://doi.org/10.1051/e3sconf/202561901010		https://www.scopus.com/sourceid/21100795900	
37	Sreenivasa Kumar Godlaveeti, AmmarM.Tighezza, Gopal Naik. B, Subramanyam Pulimi, Rosaiah Pitcheri, Ramamanohar Reddy Nagireddy, Rajababu Chintaparty	H&S	Synthesis and Characterization of High Dielectric Constant Zirconia Nano-Rods for Advanced Sensors and Energy Storage Applications	ECS Journal of Solid State Science and Technology	13		83004	9	August	2024		International	2162-8777		scopus		SCIE		https://doi.org/10.1149/2162-8777/ad69c1		https://www.scopus.com/sourceid/21100266597	https://mjl.clarivate.com://search-results?issn=2162-8769&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
38	Mrs.Kandukuri Uma Devi Mrs.G. Sravani	H&S	Comprehensive Study of Two-Dimensional CDSE Nanoplatelets: Heterostructures, Doping Approaches, Photophysical Traits, and Technological Applications	Industrial Engineering Journal	17	11			November	2024		International						Others				
39	Dr. N. Kannaiya Raja, Janjhyam Venkata Naga Ramesh, Prof. Ts. Dr. Yousef A.Baker El-Ebiary, Elangovan Muniyandy, Dr. N. Konda Reddy, Dr. Vanipenta Ravi Kumar, Dr Prasad Devarasetty	H&S	Pose Estimation of Spacecraft Using Dual Transformers and Efficient Bayesian Hyperparameter Optimization	International Journal of Advanced Computer Science and Applications	16	4	629-644		April	2025		International	2156-5570		scopus						https://www.scopus.com/sourceid/21100867241	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of MBA

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	Dr.P.Subramanyam	MBA	The Role of Environmental, Social, and Governance (ESG) Metrics in Investment Decisions	International Journal of Environmental Sciences	11	3S	1153-1162		5	2025		Yes	2229-7359					YES	http://theaspd.com/index.php/ijes			
2	Dr.P.Subramanyam	MBA	Computational Modeling of Leadership Styles and Their Impact on Organizational Success	International Journal of Computational and Experimental Science and Engineering	11	2	2833-2837		3	2025		Yes	2149-9144		YES				https://www.ijcesen.com/index.php/ijcesen			
3	Dr.T.Navaneetha	MBA	Blockchain-enabled Trust and Transparency in Influencer Marketing on Social Media Platforms	IEEE				23	10	2024		Yes			YES				10.1109/ICEEICT61591.2024.10718613		https://www.scopus.com/authid/detail.uri?authorId=57214144168	
4	Dr.G.Kanuka Raju	MBA	The Mediating Role of Investment Strategy on the relationship between market timing ability and mutual fund performance	European Economic Letters	14	4	1393-1405		10	2024		Yes	2323-5233					YES	https://www.eelet.org.uk/index.php/journal			
5	A.Anjanaiah	MBA	Importance of Mutual Funds in India	European Economic Letters	14	3	1653-1660	27	9	2024		Yes	2323-5233					YES	https://www.eelet.org.uk/index.php/journal			
6	K.SubbaReddy	MBA	Uncovering the Dynamic Relationships between Bank Nifty and Exchange Rates	Journal of International Management	30	12	44-55		8	2024		Yes	1075-4253					YES	https://ijocb.com/index.php/IJCB/article/view/11			
7	Dr.G.Kanuka Raju	MBA	Performance Analysis Of Mutual Funds With Special Reference To SBI Long Term Equity Fund –Growth Option Scheme	International Journal of Creative Research Thoughts	12	7	202-207		7	2024		Yes	2320-2882					YES	https://www.ijcrt.org/papers/IJCRTAK02022.pdf			
8	Dr.G.Kanuka Raju	MBA	Rural Governance strategies and policies with recent developments in Indian case studies	YMER	23	7	255-261		7	2024		Yes	0044-0477					YES	https://ymerdigital.com/			
9	Dr.V.Mouneswari	MBA	E-Commerce Risk Perception and Management: A Bibliometric Review (1995–2023) Highlighting Theoretical Insights and Future Directions	International Research Journal of Multidisciplinary Scope	6	2	410-423	30	5	2025		Yes	2582-631X		YES				10.47857/irjms.2025.v06i02.03090		https://www.irjms.com/wp-content/uploads/2025/04/Manuscript_IRJMS_03090_WS.pdf	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

CONSOLIDATED REPORT OF R&D ACTIVITIES

List of Research Papers published by the faculty during- 2024-25

Department of MCA

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Day of publication	Month of publication	Year of publication	National	International	ISSN / ISBN	ICI / UGC Care	Scopus	SCI	Web of Science (SCIE / ESCI)	Other	Journal link (DOI)	Link to the notification in UGC enlistment of the Journal	Link to the notification in Scopus enlistment of the Journal	Link to the notification in WoS enlistment of the Journal
1	P.MABJAN	MCA	Big Data Analytics in E-Commerce using Distributed Deep Neural Networks	IJRASET	13	V		7	MAY	2025		YES	2321-9653	45.98					https://www.ijraset.com/best-journal/big-data-analytics-in-ecommerce-using-distributed-deep-neural-networks			
2	S.Thabreez Basha	MCA	CROP YEILD PREDICTION AND RECOMMENDATION SYSTEM USING MACHINE LEARNING	Industrial Engineering Journal	Vol. XVII	Issue No.10	19-22		October	2024	YES		0970-2555									
3	P. KAVITHA	MCA	Performance Assessment of CPU Scheduling Algorithms: AScenario-Based Approach with FCFS, RR, and SJF	The BioScan	19	2	132-142	07-10-24	JULY	2024	YES		0973-7049				Web of Science		https://doi.org/10.63001/tbs.2024.v19.i02.S1			

STM JOURNALS

Journal of
Polymer & Composites

ISSN: 2321-2810 (Online)
ISSN: 2321-8525 (Print)
Volume 13, Special Issue 4, 2025
DOI (Journal): 10.37591/JoPC

https://journals.stmjournals.com/jopc

Research JoPC

Development of Bio-Based Polymer Composites for Sustainable Construction Materials

Rashid Hashmi[1,*], N Krishnamoorthy[2], S. Thulasi [3], Paramasamy S[4], D. Gouse Peera[5], Rajvardhan Jigyasu[6]

Abstract

The demand for eco-friendly sustainable construction materials has gained significant interest in the development of bio-based polymer composites as ecologically suitable alternatives to traditional petrochemical-based polymer composites. The environmental problems associated with non-biodegradable, high-carbon-footprint polymer composites make their more bio-based counterparts an attractive option that offers both environmental and structural benefits. To evaluate environmental impact and industrial feasibility, a comprehensive life cycle assessment was performed. The methodology adopts optimized bio-based polymer matrices such as PLA and PHA and implants natural fibers and nano-enhanced fillers through reinforced fabrication processes. Mechanical testing, tensile, flexural, and impact strength assessment, thermal analysis, and durability studies were performed on the composites. Nano-enhanced composites have a novel self-healing mechanism through a microcapsule-based healing agent. The environmental performance of bio-based composites is thus compared with conventional materials using LCA. It was proved in the results that all had enhanced mechanical strength, thermal stability, and recovery of self-healing efficiency up to 80% after the formation of micro-cracks. Findings of LCA results show around 30–50% decrease in carbon footprint in comparison with synthetic composites. This study provides a scalable and sustainable solution for construction materials by optimizing the performance of bio-based polymer composites with superior mechanical performance and eco-friendliness to promote their industrial feasibility and support the transition toward sustainable building technologies.

***Author for Correspondence**
Rashid Hashmi

[1]Professor of Practice, Department of Mass Communication, Sharda School of Media Film & Entertainment, Sharda University, Greater Noida, Uttar Pradesh, India
[2]Assistant Professor, Department of Computer Science and Applications (MCA), Faculty of Science and Humanities, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamilnadu, India
[3]Assistant Professor, Department of Mechanical Engineering, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli, Tamilnadu, India
[4]Associate Professor, Department of Mechanical Engineering, Sethu Institute of Technology, Tamilnadu, India
[5]Assistant Professor, Department of Civil Engineering, Annamacharya University, Rajampet, Andhra Pradesh, India
[6]Assistant Professor, Department of Electrical Engineering, Netaji Subhas University of Technology, Delhi, India

Received Date: February 03, 2025
Accepted Date: May 09, 2025
Published Date: May 16, 2025

Citation: Rashid Hashmi, N Krishnamoorthy, S. Thulasi, Paramasamy S, D. Gouse Peera, Rajvardhan Jigyasu. Development of Bio-Based Polymer Composites for Sustainable Construction Materials. Journal of Polymer & Composites. 2025; 13(Special Issue 4): S194–S208p.

Keywords: Bio-based polymer composites, self-healing materials, nano-filler, reinforcement, sustainable construction, life cycle assessment (LCA)

INTRODUCTION

There is significant interest in bio-based polymer composites as an alternative to conventional petrochemical-based materials for sustainable construction materials. The construction industry is one of the largest contributors to environmental pollution, generating nearly 40% of global carbon emissions. Traditional polymer composites, primarily derived from petroleum-based resins, pose serious concerns due to their non-biodegradability, high energy consumption in production, and end-of-life disposal issues [1]. In contrast, attractive alternatives are emerging as bio-based polymer composites integrating renewable polymer matrices with natural fiber reinforcements may offer the reduction in environmental footprints

© STM Journals 2025. All Rights Reserved

Sample Copy of the Article for Author Only.
Not for Distribution, Uploading, or Publication on Any Other Website (or Online Platform) Except Journals Official Website.

FOREX Publication
Open Access | Rapid and quality publishing

International Journal of
Electrical and Electronics Research (IJEER)
Research Article | Volume 12, Issue 3 | Pages 762-768 | e-ISSN: 2347-470X

A Novel Open-Circuit Fault-Tolerant MMC with Multi-carrier PWM Techniques for Solar PV Applications

K. Mary Madhuri[1*], M. Latha[2], P. Maheswara Rao[3], Chevala Venkataramana[4], B.V. Sai Thrinath[5], and Syed Rubeena Bi[6]

[1,2] Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, India
[3]Department of Electrical and Electronics Engineering, Vignan's Institute of Information Technology, Visakhapatnam, Andhra Pradesh, India-530 049
[4]Assistant Professor, Department of Electrical and Electronics Engineering, JNTU-GV College of Engineering, Vizianagaram, Andhra Pradesh, India-535 003
[5]Assistant Professor, Department of EEE, School of Engineering, Mohan Babu University, Tirupati, India-517102
[6]Assistant Professor, Electrical & Electronics Engineering, Annamacharya Institute of Technology and Sciences, Rajampet -516126

***Correspondence:** K. Mary Madhuri; *marymadhuri0@gmail.com*

ABSTRACT- Modular multilevel converters (MMC) have attracted much interest from researchers worldwide. It is a desirable solution due to important features such as modularity, low harmonic content at high output voltages, avoiding large capacitors and separate DC sources, easy scaling to any voltage level, and reduced voltage stress on switches, as well as being suitable for high and medium power applications, such as HVDC and motor drives. High-voltage applications require a cascade of hundreds of sub-modules. Depending on the type of sub-module selected for the application, the sub-module of the MMC may contain several switches. Depending on the MMC-based application, the converter typically needs to operate for a long period, two or three years, without interruption. MMCs can experience many electrical problems, including single line-to-ground faults, DC-bus short circuit faults, switch open circuit faults, and short circuits. A malfunction like this can damage the MMC and cause the system voltage to drop. Therefore, a robust fault-tolerant technique needs to be developed. Any fault-tolerant method can be divided into three phases: fault detection and localization, fault bypass mechanisms, and post-fault control. A major emphasis of this work is post-fault control measures to restore pre-fault voltage levels quickly. Our research has the potential to be applied in various high and medium power applications, such as HVDC and motor drives, where the reliability and performance of the power conversion system are crucial.

Keywords: Fault detection, Modular Multilevel converter, Phase Opposition Disposition, Total harmonic Distortion, Photovoltaic.

ARTICLE INFORMATION

Author(s): K. Mary Madhuri, M. Latha, P. Maheswara Rao, Ch. Venkataramana, B.V. Sai Thrinath and Syed Rubeena Bi;
Received: 02/03/2024; **Accepted**: 25/06/2024; **Published**: 25/07/2024;
e-ISSN: 2347-470X;
Paper Id: IJEER 0203-04;
Citation: 10.37391/IJEER.120306xxx
Webpage-link:
https://ijeer.forexjournal.co.in/archive/volume-12/ijeer-120306.html

Publisher's Note: FOREX Publication stays neutral with regard to Jurisdictional claims in Published maps and institutional affiliations.

1. INTRODUCTION

The area of modular multilevel converters (MMC) has recently gotten a lot of attention from scientists all over the world [1-3]. Modularity, low harmonic content at high output voltages, the absence of bulky capacitors and isolated DC sources, easy scalability at any voltage level, and low voltage stress on power semiconductor switches all contribute to it being a promising solution for high and medium power applications like HVDC and motor drives [3-5].

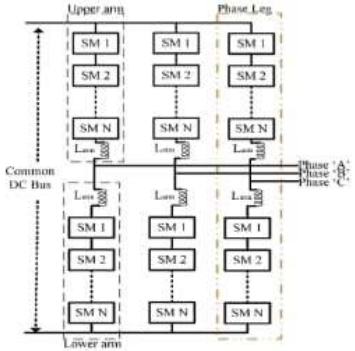


Figure 1. Topology of a three-phase with 'N' sub-modules in each arm of a phase leg.

Key advantages such as scalability, low output voltage THD, and common fault energy make MMC, a multi-cell Voltage source converter, a popular choice for high- and medium-

scientific reports

Check for updates

OPEN

Improving load frequency controller tuning with rat swarm optimization and porpoising feature detection for enhanced power system stability

Pasala Gopi[1], N. Chinna Alluraiah[1], Pujari Harish Kumar[2], Mohit Bajaj[3,4,5]✉, Vojtech Blazek[6] & Lukas Prokop[6]

Load frequency control (LFC) plays a critical role in ensuring the reliable and stable operation of power plants and maintaining a quality power supply to consumers. In control engineering, an oscillatory behavior exhibited by a system in response to control actions is referred to as "Porpoising". This article focused on investigating the causes of the porpoising phenomenon in the context of LFC. This paper introduces a novel methodology for enhancing the performance of load frequency controllers in power systems by employing rat swarm optimization (RSO) for tuning and detecting the porpoising feature to ensure stability. The study focuses on a single-area thermal power generating station (TPGS) subjected to a 1% load demand change, employing MATLAB simulations for analysis. The proposed RSO-based PID controller is compared against traditional methods such as the firefly algorithm (FFA) and Ziegler-Nichols (ZN) technique. Results indicate that the RSO-based PID controller exhibits superior performance, achieving zero frequency error, reduced negative peak overshoot, and faster settling time compared to other methods. Furthermore, the paper investigates the porpoising phenomenon in PID controllers, analyzing the location of poles in the s-plane, damping ratio, and control actions. The RSO-based PID controller demonstrates enhanced stability and resistance to porpoising, making it a promising solution for power system control. Future research will focus on real-time implementation and broader applications across different control systems.

Keywords Porpoising, PID control schemes, Rat swarm optimization, Load frequency control, Firefly algorithm, Automatic generation control (AGC)

Load frequency control (LFC) controllers play a critical role in the smooth and dependable operation of power systems. These controllers are essential for maintaining the stability of the system by regulating its frequency, which is crucial for ensuring the synchronized operation of various interconnected components. In addition to frequency regulation, LFC controllers are responsible for balancing the generation and load within the system. By continuously adjusting the power output of generators in response to changes in demand or disturbances, LFC controllers help to match supply with demand, thereby ensuring grid stability. Moreover, LFC controllers contribute to the overall stability of power plants by mitigating the impact of sudden load changes or fluctuations in renewable energy sources. Compliance with regulatory standards is another vital function of LFC controllers, as they ensure that the power system operates within specified frequency and voltage limits. Without effective LFC controllers, power systems would be more vulnerable to disruptions, such as blackouts or brownouts, voltage fluctuations, frequency deviations, and other reliability issues, which could have significant economic and societal impacts. Therefore, the development and implementation of robust LFC controllers are essential for ensuring the reliable and secure operation of modern power systems.

[1]Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, India. [2]School of Electrical and Communication Sciences, JSPM University, Pune, India. [3]Department of Electrical Engineering, Graphic Era (Deemed to be University), Dehradun 248002, India. [4]Hourani Center for Applied Scientific Research, Al-Ahliyya Amman University, Amman, Jordan. [5]Graphic Era Hill University, Dehradun 248002, India. [6]ENET Centre, VSB—Technical University of Ostrava, 708 00 Ostrava, Czech Republic. ✉email: thebestbajaj@gmail.com

COGENT ENGINEERING
2024, VOL. 11, NO. 1, 2391958
https://doi.org/10.1080/23311916.2024.2391958

SYSTEMS & CONTROL ENGINEERING | RESEARCH ARTICLE

OPEN ACCESS Check for updates

Hybrid fuzzy PID control with HAEFA optimization for simultaneous voltage and frequency stabilization in multi-area diverse source power systems

Ch. Naga Sai Kalyan[a], Pasala Gopi[b], Shir Ahmad Dost Mohammadi[c] and Mohit Bajaj[d,e,f]

[a]EEE Department, Vasireddy Venkatadri Institute of Technology, Guntur, India; [b]EEE Department, Annamacharya University, New Boyanapalli, Rajampet; [c]Department of Electrical and Electronics, Faculty of Engineering, Alberoni University, Kapisa, Afghanistan; [d]Department of Electrical Engineering, Graphic Era (Deemed to be University), Dehradun, India; [e]Hourani Center for Applied Scientific Research, Al-Ahliyya Amman University, Amman, Jordan; [f]Graphic Era Hill University, Dehradun, India

ABSTRACT

This paper addresses the stabilization of voltage and frequency in multi-area diverse source power systems (MADSPS). Consequently, to attain this, an investigation was carried out on the load frequency control and automatic voltage regulation in combined (CLFC-AVR) analysis. The MADSPS comprises multiple generation units, such as Thermal-Hydro-Wind in each area, and performs the analysis by laying area-1 with a 10% step load disturbance (10%SLD) under the supervision of a fuzzy-aided proportional-integral-derivative (PID) optimally rendered with a novel searching strategy of hybrid (H) artificial electric field (HAEFA) algorithm. However, the tuning of the fuzzy PID controller using the HAEFA technique is performed under different time-domain objective functions and their combinations to reveal the most suitable index for optimization of the considered model. Moreover, the efficacy of the HAEFA-tuned fuzzy PID was compared with classical PI/PID. Further, the CLFC-AVR investigation on MADSPS is stretched with the integration of superconducting magnetic energy storage (SMES) in each area and the flexible AC transmission device of the thyristor-controlled series compensator (TCSC) with a tie line for performance boost.

ARTICLE HISTORY
Received 21 February 2024
Revised 30 April 2024
Accepted 6 August 2024

KEYWORDS
Combined LFC-AVR model; TCSC-SMES strategy; 10% SLD; Performance indices; Fuzzy PID controller

SUBJECTS
Electrical and Electronic Engineering; Power and Energy; Systems and Control Engineering

1. Introduction

An LFC is one of the critical components for controlling the operation of an interconnected power system (IPS) to reliably generate quality power and distribution to the consumer end. The IPS has a very wide range and comprises control regions or areas, and each area is coupled to another via tie lines. It facilitates a contractual exchange of power between surplus and deficit areas. The system's power demand is always changing; the generation at the utility end must satisfy the load demand; otherwise, the real power mismatch (RPM) between the demand and generation causes frequency variations. This can be monitored and governed by a load-frequency controller. However, power system stability cannot be preserved by simply regulating the area frequency. In realistic practice, generation utilities are provided with automatic voltage regulation units to monitor the terminal voltage of the system. Moreover, there is an exact coupling between the operations performed in the LFC-AVR loops. The variations that occur in the AVR loop for maintaining the voltage at the prescribed range may affect the performance of the LFC, and thereby the RPM and the area frequency. Therefore, to maintain complex IPS stability, both frequency and voltage must be simultaneously addressed.

It has been shown from a recent literature review that irrespective of IPS models, researchers have implemented various control strategies for LFC. Traditional controllers of PI/PID fine-tuned with fitness-dependent optimization (FDO) (Daraz et al.,

CONTACT Shir Ahmad Dost Mohammadi sh_ahmad.dm@au.edu.af Department of Electrical and Electronics, Faculty of Engineering, Alberoni University, Kapisa, Afghanistan; Mohit Bajaj thebestbajaj@gmail.com Department of Electrical Engineering, Graphic Era (Deemed to be University), Dehradun, 248002, India

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

Vol. XVII & Issue No. 08 August-2024
INDUSTRIAL ENGINEERING JOURNAL

MODELING AND ANALYSIS OF FIVE PHASE SURFACE PMSM FOR APPLICATION IN ELECTRIC VEHICLES

Dr. K.Vijay Bhaskar

Abstract

Polyphase permanent magnet synchronous motors (PMSM) model outstanding performance in comparison to three phase permanent magnet synchro nous motors and this is possible because of the recent development in power electronics. Five phase permanent magnet synchronous motors have significant applications in aerospace and electric vehicles where highly accurate speed and torque control of the motor are a major requirement. This paper presents a detailed analysis of vector controlled five phase permanent magnet synchronous motors in terms of efficiency, power, speed and torque ripple analysis along with the power factor analysis at different speeds.The average torque, torque ripple, speed,speed ripple and power factor for same are calculated and analyzed. The analysis has been carried out through MATLAB Simulink Power Graphical User Interfac

Keywords – Permanent Magnet Synchronous Motor, Phase Sequence, Torque Ripple, Speed Ripple, Hybrid Electric Vehicles

INTRODUCTION

The permanent magnet synchronous motors can be of two types: sinusoidally fed PMSM and rectangular fed brushless DC PM Motors [1]. Motors that are currently used in EVs are permanent magnet synchronous motor (PMSM), induction motor (IM) and switched reluctance motor (SRM). PMSM is the most preferred one due to the high torque and high-power density [2]. The stator winding of a PMSM motor is wound such that back emf is sinusoidal which results in a constant torque. It has 32 voltage vectors that has various effects on torque and current is a challenge in selecting the optimal switching state to give best performance. A direct torque control strategy reduces harmonics current and torque ripple [3]. The third order harmonic component can be used for achieving optimal performance of torque per ampere. The direct torque model predictive control helps in optimizing the torque and reducing the higher order harmonics, minimizes the losses thereby increasing the efficiency [4]. More advanced vector control techniques are applicable to sinusoidally fed PMSMs for better controllability over the complete speedrange. A five-phase brushless PM motor has concentrated winding so that is produces trapezoidal back emf and overcomes the disadvantages of a PMBLDC motor [5-6]. The conventional hysteresis current controller has been replaced by synchronous frame currentcontroller. This controller not only possesses the advantage of linear controller but also facilitatesthe current regulation without a steady state error [7]. Harmonics are undesirable frequencies that are superimposed on the fundamental waveform resulting in a distorted waveform. The theory of the sequence components is usually considered to analyze the unbalanced system.This theory enables one to transform the five unbalanced phases into a set of three balanced phasors. Phase sequence is the order in which the voltage waveforms of a polyphase AC source reach their respective peaks. In a five-phasesystem According to thesequence component theory/mathematical manipulation, in a balanced system the negative and zero sequence components will not be present. However, in practice a perfectly balanced system does not exist.In a 50Hz five phase power system, the phases A, B, C, D and E are 720apart. The fifth harmonic that is of frequency of 250Hz and its multiples are exactly in phase with each other.A PMSM driven mini electric vehicle modelisobserved. An efficiency map is developed and implemented inthe Advanced Vehicle Simlutor Program to calculate the performance of the Electric Vehicle[8].A double tuned filtering method which traps two harmonics with one filter has been introduced to mitigate Zero-sequence harmonics in power distribution system [9]. It has proved to be a low-cost solution. The zero-sequence harmonic in a three-phase system can be attenuated by 80% using a shunt electromagnetic filter [10]. This is simple cheap and robust equipment. Axial flux PMSM has prevalence over other motors in terms of noise, vibration and efficiency. Torque ripple inn these motors can be reduced by 86.71% by applying skew of upto 400with an angle of 50to the rotor magnets [11]

2. Phase Sequence in Five Phase Power Supply

When a five-phase permanent magnet synchronous motor is fed from an inverter, the machine terminal voltage is non-sinusoidal and has half wave symmetry due to which only odd harmonics will be present. A sinusoidal waveform is a combination of fundamental and harmonics and the waveform can be analyzed using Fourier Transform. The harmonics in a three-phase supply can be positive sequence, negative sequence and zero sequence. Whereas in afive-phase supply, the harmonics can be positive sequence, negative sequence, zero sequence along with two more sequences. The additional sequences can be referred to as double positive sequence and double negative sequence.

INDERSCIENCE Online

ANYWHERE | Enter words / phrases / DOI / ISSN / keywords / autho | Advanced Search

Home | Browse Journals

Journal Home | Current Issue | Previous Issues

Home → European Journal of Industrial Engineering → Vol. 18, No. 5

NO ACCESS

Pragmatic simultaneous scheduling of machines, AGVs, tool transporter and tools in a multi machine FMS using flower pollination algorithm

N. Sivarami Reddy, D.V. Ramamurthy, K. Prahlada Rao and M. Padma Lalitha

Published Online: 2 Sep 2024

PDF | Abstract & Keywords | Tools | Share

SSRG International Journal of Electrical and Electronics Engineering
ISSN: 2348-8379/ https://doi.org/10.14445/23488379/IJEEE-V11I9P120

Volume 11 Issue 9, 224-232, September 2024
© 2024 Seventh Sense Research Group®

Original Article

Integrating Multi-Agent System Control in Hybrid Microgrid System for Energy Management System

K. Praveen Kumar Reddy[1], P. Balachennaiah[2]

[1]*EEE Department, Jawaharlal Nehru Technological University Anantapur, Andhra Pradesh, India.*
[2]*EEE Department, Annamacharya Institute of Technology and Sciences,*
Affiliated to Jawaharlal Nehru Technological University Anantapur, Andhra Pradesh, India.

[1]*Corresponding Author : praveenk0311@gmail.com*

Received: 09 July 2024 Revised: 12 August 2024 Accepted: 09 September 2024 Published: 28 September 2024

Abstract - *Microgrids are decentralized power systems installed at customer locations, featuring a range of generating units and operational modes. These systems are designed to meet the specific energy requirements of users while also supplying surplus power back to the main grid. Often incorporating Renewable Energy Sources (RES) such as solar PV cells, wind generators, and batteries, microgrids are valued for their compact size and flexible configurations. To maintain stable operation across these diverse energy sources, a Multi-Agent System (MAS) is utilized. This MAS is tailored for modeling and autonomous decision-making. The study focuses on a microgrid equipped with wind power, solar PV power, battery, and a local electrical load, collectively forming the Hybrid Microgrid System (HMGS). The simulation is developed using the Java Agent Development Environment (JADE), which facilitates effective management of the system's varied components. The primary goal of this study is to assess the performance and reliability of the HMGS, with a particular focus on the role of the MAS in managing the complex interactions between different power sources to ensure sustainable and efficient operation.*

Keywords - *Energy management system, Hybrid microgrid system, Java agent development framework, Multi-agent control system, Solar power, Wind power.*

1. Introduction

Microgrids are compact power systems designed to deliver a stable electricity supply to a limited number of users. They consist of various local and distributed generation sources, consumption equipment, storage systems, and a control and monitoring centre. To maintain energy balance and ensure reliability, the microgrid must carefully manage the relationship between energy consumption and production [1-4]. In a hybrid power system, microgrids primarily leverage renewable energy sources to generate high-quality electricity. They can operate either connected to the main grid (grid-connected mode) or independently (island mode). In [5], the authors applied the Teaching-Learning-Based Optimization (TLBO) technique to address the challenge of minimizing the Total Operating Cost (TOC) of the microgrid.

In [6], the authors proposed a microgrid model incorporating an Energy Management System (EMS) based on Predictive Control. This EMS plays a crucial role in optimizing the microgrid's operation, ensuring efficient energy utilization and grid stability. This model incorporates Photovoltaic (PV) panels and battery storage technology, with the EMS designed to ensure stable and optimal generation from multiple sources within the microgrid. To enhance stability under varying load and voltage conditions, adaptive fuzzy logic and PI controllers have been suggested as effective solutions [7]. For islanded operations, several cooperative control strategies have been proposed, including direct control vector and droop control methods [8]. Additionally, Smart Microgrid (SMG) systems now utilize rule-based EMS to effectively monitor and manage real power flow [9]. In the context of AC/DC microgrids with batteries and Renewable Energy Sources (RES), the EMS plays a critical role in maintaining energy stability [10].

The authors outlined a Photovoltaic (PV) microgrid featuring a hybrid energy storage system that combines batteries and super capacitors [11]. This microgrid is designed to operate both in grid-connected and standalone modes. To ensure optimal performance and stability, a coordinated control-based energy management system is implemented. This system regulates the DC link voltage and maintains voltage and frequency balance at the PCC. Inverter control employs the D-Q reference frame technique, while DC link voltage regulation is achieved through a dual-loop PI controller. Despite these advancements, challenges remain, notably the lack of runtime adaptation and communication overhead. To tackle these issues, the microgrid monitoring

This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/)

Indonesian Journal of Electrical Engineering and Computer Science
Vol. 35, No. 3, September 2024, pp. 1397~1403
ISSN: 2502-4752, DOI: 10.11591/ijeecs.v35.i3.pp1397-1403

Performance evaluation of PV configurations considering degradation rate and hot spots

Suresh Kumar Asadi[1], Jinka Sreeranganayakulu[2], Sainadh Singh Kshatri[3], Karimulla Syed Mohammad[4]

[1]Department of Electrical and Electronics Engineering, G. Pullaiah College of Engineering and Technology, Karnool, India
[2]Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, India
[3]Department of Electrical and Electronics Engineering, B V Raju Institute of Technology, Narsapur, India
[4]Department of Engineering, College of Engineering and Technology, University of Technology and Applied Sciences, Al Aqar, Oman

Article Info

Article history:

Received Feb 16, 2024
Revised Apr 27, 2024
Accepted May 16, 2024

Keywords:

Bridge-link
Photovoltaic
Series-parallel
Spider web tie
Triple-tied

ABSTRACT

The rapid emergence and evolution of renewable energy sources such as solar energy has become a vital component of the global effort to meet the energy needs of the future. The major concerns for continuous solar photovoltaic (PV) generation are degradation rate, hot spots. These factors lead to the negative impact on PV mismatch losses, fill factor, maximum power and efficiency. To improve the performance of PV system, the simplest solution is PV panel configuration hence in this paper spider web tie (SWT) based PV Panel configuration in proposed. The proposed configuration is implemented on KC200GT PV Panel of 5×5 size PV panels considering degradation rate, hot spot. The performance of SWT configuration is compared with series-parallel (SP), bridge-link (BL), triple-tied (TT), and photovoltaic (PV) panel configurations and performance parameters such as Vmp, Imp, Pmp, Voc, Isc. FF, ΔPml, and η are calculated in all the cases. In all the cases the proposed SWT configuration exhibited the improved performance.

This is an open access article under the CC BY-SA license.

Corresponding Author:

Karimulla Syed Mohammad
Department of Engineering, College of Engineering and Technology
University of Technology and Applied Sciences
Al Aqar, Oman
Email: syedkarimulla1@gmail.com

1. INTRODUCTION

Despite the various challenges that solar photovoltaic (PV) system face, such as the high cost of electricity, they are still considered to be the best option for addressing the future energy needs of nations. In the next decade, the cost of renewables is expected to come down, making PV systems an ideal alternative to fossil fuels. The rapid emergence and evolution of PV markets are attributed to various factors. Some of these include the increasing demand for energy, the government's support for renewable energy sources and the technological advancements that have occurred in the field. Nevertheless, the performance of the PV system is of major concern. The output of the PV panels is effected by various factors. Degradation rate and hotspots are notable parameters affect the output of the PV panel [1]–[3]. Degradation rate of PV panel lead to decrease in PV output over a period of time [4], [5]. This leads to the increase in PV mismatch losses and decrease in efficiency and fill factor [6]. In a PV module, a hot spot represents an over proportional heating of a single solar cell or a cell part compared to the surrounding cells [7]. When the operating current of a PV module exceeds the short-circuit current due to the faulty or shadowed cell, it can cause overheating. This

International Journal of Power Electronics and Drive Systems (IJPEDS)
Vol. 15, No. 3, September 2024, pp. 1339~1347
ISSN: 2088-8694, DOI: 10.11591/ijpeds.v15.i3.pp1339-1347

Slip angle control based DTC of open-end winding induction motor drive using dual randomized decoupled PWM for acoustic noise mitigation in EV application

Ganesh Challa, M. Damodar Reddy
Department of Electrical and Electronics Engineering, Sri Venkateswara University, Tirupati, India

Article Info

Article history:

Received Feb 22, 2024
Revised Apr 13, 2024
Accepted Apr 24, 2024

Keywords:

Acoustic noise
Electric vehicle
DTC
OEWIM
RPWM

ABSTRACT

Reduced vibration, acoustic noise, and higher DC link utilization are advantageous for industrial drives and/or electric vehicle (EV) drives. Direct torque controlled (DTC) induction motor drives fulfill the stringent demands of the EV and/or industries of the modern era. However, torque and flux ripples occur at steady state conditions, resulting in increased acoustical noise. As a result, EV and/or workplace noise has emerged as a major issue, both in terms of human health and safety. The space vector pulse width modulation (SVPWM) improves DC bus utilization. However, SVPWM is less effective in reducing acoustic noise. Many random PWM (RPWM) approaches, including random zero vector PWM (RZVPWM), random pulse position modulation (RPPM), random carrier frequency modulation (RCFM), and RCFM-RPPM are effective in reducing acoustic noise. However, due to the decreased level of randomization, reducing noise remains problematic. This research proposes a decoupled hybrid dual randomized RPWM (HDRRPWM) schemes for slip angle control based DTC of an open-end winding induction motor drive for acoustic noise mitigation in EV applications. The suggested schemes aim to demonstrate the efficacy of HDRRPWMs in dispersing the acoustic noise spectrum as compared to traditional methods.

This is an open access article under the CC BY-SA license.

Corresponding Author:

Ganesh Challa
Department of Electrical and Electronics Engineering, Sri Venkateswara University
Tirupati, Andhra Pradesh 517502, India
Email: ganesh.challa@mail.com

1. INTRODUCTION

Electric vehicle (EV)s are road vehicles with electric propulsion, which consist of motor, transmission system, and wheels. The electric propulsion system is the heart of EV [1]. Induction motor (IM)s is commonly used in EVs due to their compact size, durability, low cost, high speed, and low maintenance [2]. EVs and/or industrial drives benefit from increased DC link utilization, lower acoustic noise, and vibration. The direct torque control (DTC) approach has proven its ability to meet the stringent demands of industries & EVs of the modern era. In recent years DTC has gained attraction for EV applications [3] due to its rapid torque control, and less on-line computation. However, it suffers from torque, flux ripples during steady-state conditions and variable switching frequency operation. These ripples can be mitigated by the use of a multi-level inverter (MLI)s. Among many MLIs, dual inverter (DI) topology for open-end winding induction motor (OEWIM) is preferred [4] and can be used extensively in EVs [5]. Variable switching frequency issues can be avoided by space vector pulse width modulation (SVPWM). SVPWM improves DC bus utilization as demanded by EVs. High-frequency harmonics, electromagnetic interference (EMI), acoustic noise, and vibration are all inherent drawbacks of SVPWM-based drives.

FOREX Publication
Open Access | Rapid and quality publishing

International Journal of
Electrical and Electronics Research (IJEER)
Research Article | Volume 12, Special Issue on ET-EVS | Pages 18-23 | e-ISSN: 2347-470X

Acoustic Noise Mitigation in Slip Angle Controlled DTC of Open-End Winding Induction Motor Drive Using Dual Randomized AISPWM for EV Application

Ganesh Challa[1], Dr. M. Damodar Reddy[2]
[1]*Research Scholar, Department of EEE, S. V. University, Tirupati, India; ganesh.challa@gmail.com*
[2]*Professor, Department of EEE, S. V. University, Tirupati, India; mdreddy999@rediffmail.com*

***Correspondence:** *azrataj.eee@gcet.edu.in*

ABSTRACT- Low vibration and acoustical noise as well as effective DC link usage are the demands of industries and Electric Vehicles (EV). Direct Torque Control (DTC) of Induction Motors (IMs) meet the EV and other modern industry requirements. Still, flux as well as torque swings lead to higher acoustical noise. Consequently, EVs as well as working place noise have become major concerns, affecting the health of individuals. Efficiency of dc link use is improved by Space Vector Pulse Width Modulation (SVPWM). Yet, SVPWM is not efficient in lowering acoustical noise. Different RPWM techniques can lower acoustic noise. Still, the lower degree of randomization makes the noise reduction difficult. This work presents a Hybrid Dual Random PWMs (HDRPWMs) based Alternate Inverter Switching (AIS) strategy for Slip-Angle Controlled Direct Torque Control of an Open-End Winding IM Drive (OEWIMD). This technique is aimed to lower the acoustical noise for EVs. The intended PWMs seek to show how well HDRRPWMs distribute the acoustical noise spectra in contrast to conventional techniques.

General Terms: AIS, DTC, EV, and OEWIMD.
Keywords: Acoustical Noise, and RPWM.

ARTICLE INFORMATION
Author(s): Ganesh Challa and Dr. M. Damodar Reddy;
Received: 29/04/2024; **Accepted**: 17/09/2024; **Published**: 30/09/2024;
e-ISSN: 2347-470X;
Paper Id: IJEER_SP_CS_2024_07;
Citation: 10.37391/ijeer.12et-evs04
Webpage-link:
https://ijeer.forexjournal.co.in/archive/volume-12/ijeer-12et-evs04.html

This article belongs to the Special Issue on **Emerging Technologies in Electric Vehicle Systems**

Publisher's Note: FOREX Publication stays neutral with regard to Jurisdictional claims in Published maps and institutional affiliations.

1. INTRODUCTION

An Electrical Vehicle (EV) is a transport vehicle that operates using electricity as its power source. It consists of a motor, gearbox, other equipment. The motor is a crucial component of EVs [1]. Induction Motors (IMs) are typically employed in EVs because of their small size, robustness, affordability, high velocity, and little upkeep requirements [2]. EVs and industry drive applications offer numerous benefits, including enhanced utilisation of the DC link, decreased acoustical limited noise and vibration levels for a more pleasant environment. The Direct Torque Control (DTC) method has demonstrated its capability to fulfil the rigorous requirements of contemporary industries and EVs. In recent years, there has been a growing attraction with utilizing DTC for EV applications [3] because of its ability to quickly control torque and its reduced need for online calculation. However, it experiences torque and flux fluctuations during stable operating conditions and when the switching frequency varies.

The usage of a Multi-Level Inverters (MLIs) can reduce these ripples. The Dual Inverter (DI) topology is favored among many MLIs for Open End Winding Induction Motor Drives (OEWIMDs) [4]. It is commonly employed in EVs [5]. Using Space Vector Pulse Width Modulation (SVPWM) able to effectively address issues associated with variable switching frequency. It improves the efficiency of the DC bus, which is essential for meeting the demands of EVs. SVPWM-fed drives come with inherent limitations such as higher order harmonics, acoustical noise, and vibrations.

One drawback of SVPWM is the potential for vibrations and noise in motor drives due to the higher order harmonics generated by the inverter. This is due to the fact that the frequency at which humans can perceive sound often aligns with the frequency at which switches operate (carrier frequency) [6,7]. The inverter output current is composed of harmonics that are found at the side bands of the multiple of the carrier frequency. These harmonics have a higher frequency and a limited bandwidth, resulting in motor vibrations and the production of narrow-band noise that can be uncomfortable for the operating staff. Thus, the rise of EVs and the issue of workplace noise have become major areas of concern, affecting productivity, employee well-being, and overall protection. In order to address the restricted range of noise, it is possible to increase the switching frequency to a value higher than 20kHz. However, the increased inverter losses [8] will have an adverse effect on the conversion efficacy of the converter and the overall length of the EV travel. The Random PWM (RPWM) method is an effective solution to reduce acoustical noise by evenly distributing harmonics of the inverter output. This is accomplished by utilizing a fixed carrier frequency [9].

Vol. XVII & Issue No.10 October 2024
INDUSTRIAL ENGINEERING JOURNAL

INTEGRATION OF MACHINE LEARNING IN BATTERY MANAGEMENT SYSTEMS FOR LITHIUM-ION CELLS

Dr. PRAKASH D
MOHAMED SATHAK
L.BAYA REDDY

Abstract

There is a lot of interest in the important role that machine learning (ML) plays in developing several areas of lithium-ion battery development. This paper looks at the problems, recent developments, and real-world applications of using machine learning to lithium-ion battery research. It highlights the significance of particular machine learning techniques and their revolutionary impacts. Applications of machine learning in the design, manufacturing, maintenance, and end-of-life phases of lithium-ion batteries are covered in the study. Key challenges addressed include limited data availability, complexities in data pre-processing and cleaning, small sample sizes, high computational demands, difficulties in model generalization, lack of transparency in ML models, scalability issues with large datasets, data bias, and the interdisciplinary nature of the field. Proposed solutions include leveraging techniques like Transfer Learning and N-shot Learning to address small dataset limitations, which are highlighted as promising future directions. By presenting these insights, the paper deepens our understanding of ML's role and offers valuable guidance for researchers and practitioners to fully harness its potential.

Keyword: *Machine learning - Lithium-ion batteries · Data-centric methodologies · Artificial intelligence applications*

I INTRODUCTION OVERVIEW OF RESEARCH ON LITHIUM-ION BATTERIES

As environmental and ecological concerns grow, there is a growing need for sophisticated energy storage systems to support the development of smart grids and the widespread adoption of electric vehicles (EVs). The method by which lithium-ion batteries (LIBs) store energy is called reversible lithium-ion reduction. Graphite is the anode (negative electrode) in a standard LIB setup, while a metal oxide is typically used as the cathode (positive electrode) during discharge [1]. The reversible transfer of lithium ions between the electrodes through the electrolyte is demonstrated in Figure 1, which depicts a typical LIB configuration.Lithium-ion batteries (LIBs) featuring graphite anodes and $LiCoO_2$ cathodes represent state-of-the-art energy

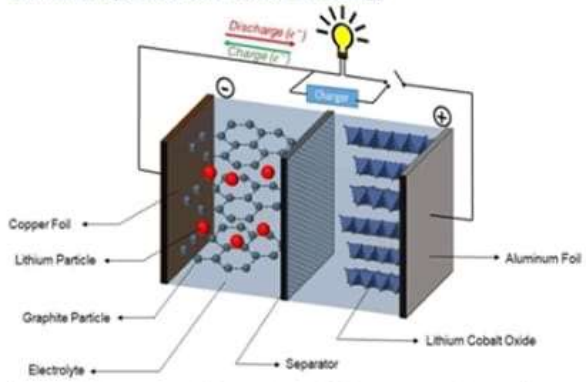


Figure 1 shows an illustration of the commonly used LIB configuration with a graphite anode and LiCoO2 cathode in the discharge state.storage solutions, supporting a wide range of applications. Maximizing their performance necessitates the development of advanced strategies for modelling, optimization, and management. LIBs have transformed energy storage with their exceptional attributes, including high operating potential and superior energy and power density. These qualities have made them indispensable across various domains, from portable electronics like smartphones and laptops to large-scale applications such as electric vehicles and microgrids.

However, traditional LIBs are nearing their theoretical energy density limits, and challenges related to performance and cost efficiency persist. Consequently, significant research efforts are focused on exploring novel electrode and electrolyte materials to enhance LIB performance and expand their capabilities [2].

A. An Overview of Machine Learning and Its Significance for Scientific Investigations

The goal of machine learning (ML), a branch of artificial intelligence (AI), is to imitate human learning processes using data and algorithms while continuously improving performance and accuracy. For tasks like data analysis, pattern identification, anomaly detection, and simulations, machine learning techniques are frequently employed in scientific research. These techniques remove the requirement for explicit instruction by empowering computers to learn and adapt on their own. Additionally, ML helps researchers make new discoveries and comprehend complicated systems by making it easier to extract important insights from large and complex datasets [3]. In the context of lithium-ion battery (LIB) research, ML has become an invaluable tool. It accelerates material development by efficiently identifying rapid ion conductors, selecting appropriate electrolytes, and addressing challenges like dendritic growth in lithium metal anodes. Chapter 5 delves deeper into the various applications of ML in LIB research. Battery studies frequently employ supervised and unsupervised learning techniques [4], which are discussed further in the chapter. The integration of ML is motivated by the complexity of LIB cell manufacturing and advancements in digital and information technologies, underscoring the critical role of these approaches [5]. Accelerating the development and optimization of the future of battery technologies is the main goal of using learning algorithms in lithium-ion battery (LIB) research

Journal of Engineering and Technology for Industrial Applications

ITEGAM-JETIA

Manaus, v.10 n.49, p. 202-210. September/October., 2024.DOI: https://doi.org/10.5935/jetia.v10i49.1275

RESEARCH ARTICLE OPEN ACCESS

ACOUSTICAL NOISE MITIGATION IN SLIP ANGLE CONTROLLED DTC OF OPEN-END WINDING INDUCTION MOTOR DRIVE USING AISPWM BASED TRIPLE RANDOMIZATION SCHEME FOR EV APPLICATION

Ganesh Challa[1] and Dr. M. Damodar Reddy[2]

[1] Research Scholar, Dept. of EEE, S. V. University, Tirupati, India.
[2] Professor, Dept. of EEE, S. V. University, Tirupati, India.

[1] http://orcid.org/0000-0001-9683-5763, [2] http://orcid.org/0000-0002-7113-580

Email: ganesh.challa@gmail.com, mdreddy999@rediffmail.com

ARTICLE INFO

Article History
Received: August 31th, 2024
Revised: October 1th, 2024
Accepted: October 2th, 2024
Published: October 31th, 2024

Keywords:
Acoustical Noise,
AISPWM,
Electric Vehicle,
OEWIM,
RPWM.

ABSTRACT

Industrial and/or Electric Vehicle (EV) drives require low vibration, acoustical noise, as well as efficient utilisation of the DC link. Induction motors with Direct Torque Control (DTC) meet the requirements of EVs and other modern industries. Flux and/or torque oscillations, on the other hand, produce high pitch acoustical noise during steady state, which has an impact on people's health and safety. Hence comprehending and reducing these oscillations are essential for quieter response of EVs. Therefore, EVs and/or workplaces noise reduction has gained significant importance. Space Vector Pulse Width Modulation (SVPWM) enhances the efficiency of DC link utilisation, as required by EVs. However, SVPWM is ineffective at noise reduction. Even if numerous Random PWM (RPWM) approaches minimize noise, the issue of noise reduction persists due to the lower level of randomization. This study offers an acoustical noise reduction strategy for EV applications, namely Alternate Inverter Switching (AIS) based Hybrid Triple Randomised PWMs (HTRPWM) for DTC of an Open-End Winding Induction Motor Drive with Slip Angle Control. The Harmonic Spread Factor (HSF) is a measure of acoustical noise; the lower the HSF, the less acoustical noise. Thus, the proposed HTRPWMs strive to reduce the HSF and are compared to existing approaches.

Copyright ©2024 by authors and Galileo Institute of Technology and Education of the Amazon (ITEGAM). This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

I. INTRODUCTION

The worldwide community's enduring dedication to reducing the impacts of global warming leads to the extensive implementation of environmentally friendly technology, such as Electric Vehicle (EV)s and Renewable Energy Sources (RES) [1]-[3]. An EV is a mode of transportation that operates only on electricity. The system has a motor, gearbox, and wheels. The electric motor is the main component of an EV and is responsible for providing the propulsion system. The performance of an EV is greatly impacted by the selection of the electric motor. Induction Motors (IMs) are commonly used in EVs because they are compact, durable, inexpensive, fast, and require minimal maintenance [4]. EVs experience advantages such as improved utilization of the DC bus, less acoustical noise as well as minimized vibrations. The Direct-Torque-Control (DTC) scheme satisfying rigorous demands of contemporary industry. In recent times, there has been a surge in interest in utilizing DTC for EV applications [5] because to its capability to rapidly adjust torque and minimize the requirement for real-time computations. Nevertheless, it suffers from the drawback of experiencing significant fluctuations in stator current, rotor flux, and torque, as well as having a delayed response due to the presence of hysteresis regulators within the torque and rotor flux control loops [6]-[7].

Employing a Multi Level Inverters (MLI) can effectively mitigate these fluctuations. The Dual Inverter (DI) structure has gained popularity for Open-End Winding Induction Motors (OEWIMs) [8]. It has the potential to be widely used in EVs [9]. The pulse pattern for the switching devices in MLI can be generated by Pulse Width Modulation (PWM) techniques. Among many PWM techniques, Space Vector Pulse Width Modulation (SVPWM) can mitigate issues arising from disparate switching

INDERSCIENCE Online

ANYWHERE Enter words / phrases / DOI / ISSN / keywords / authors Advanced Search

Home Browse Journals

Journal Home Current Issue Previous Issues

Home → International Journal of Power and Energy Conversion → Vol. 15, No. 4

NO ACCESS

Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT

B. Venkatesh, Mudassir Khan, J. Chinna Babu, C.H. Nagaraju and R. Madhan Mohan

Published Online: 2 Oct 2024

PDF Abstract & Keywords Tools Share

Abstract

In this study, the performance and emissions of Al_2O_3 alkaline cottonseed biodiesel-powered compression ignition engines were predicted. An experiment was conducted using different biodiesel blends made from cottonseed oil under various loading conditions. Biodiesel was produced using ethanol and Cao-mg/Al_2O_3 as catalysts through the transesterification process and blended with diesel to produce CBDN10, CBDN20, CBDN30, and CBDN40. The CBDN20 blends showed an evident reduction in fuel consumption by 8% and a 12% improvement in thermal efficiency at high static thrust. The use of these blends resulted in minimal CO, CO_2, and NO_x emissions from engines. These emissions were monitored by an IoT system and analysed with gas analysers, which revealed CBDN20's ability to reduce nitrogen oxide and hydrocarbon

Check for updates

Wiley
Journal of Electrical and Computer Engineering
Volume 2024, Article ID 9652424, 15 pages
https://doi.org/10.1155/2024/9652424

WILEY

Research Article

Classification and Comparative Evaluation of Text and Emoji-Based Tweets With Deep Neural Network Models

J. N. Chandra Sekhar,[1] **M. Kiran Mayee**,[2] **Ranjana Nadagoudar**,[3] **N. Chinna Alluraiah**,[4] **C. Dhanamjayulu**,[5] **Ravikumar Chinthaginjala**,[6] **Ravi K.**,[5] **Praveenkumar M.**,[5] **Satyajit Mohanty**,[5] **and Baseem Khan**[7,8]

[1]*Sri Venkateswara University College of Engineering, Tirupati, India*
[2]*Ravindra College of Engineering for Women, Kurnool, Andhra Pradesh, India*
[3]*Visvesvaraya Technological University, Belagavi, India*
[4]*Annamacharya University, Rajampet 516126, Andra Pradesh, India*
[5]*School of Electrical Engineering, Vellore Institute of Technology, Vellore, Tamil Nadu, India*
[6]*School of Electronics Engineering, Vellore Institute of Technology, Vellore, Tamil Nadu, India*
[7]*Department of Electrical and Computer Engineering, Hawassa University, Hawassa 05, Ethiopia*
[8]*Center for Renewable Energy and Microgrids, Huanjiang Laboratory, Zhejiang University, Zhejiang 311816, China*

Correspondence should be addressed to C. Dhanamjayulu; dhanamjayulu29@gmail.com and Baseem Khan; baseemahmedk@gmail.com

Received 27 November 2023; Revised 6 May 2024; Accepted 5 June 2024

Academic Editor: Mominul Ahsan

Copyright © 2024 J. N. Chandra Sekhar et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Emojis have become increasingly prevalent in today's digital world, allowing individuals to convey a wide range of emotions, from uncomplicated to intricate, to a greater extent than previously. Consequently, emojis are being utilized in sentiment analysis and tailored marketing strategies. The ongoing research on conducting emotion detection on both tweets and a symbolic expression dataset sourced from Kaggle. Given that tweets are largely commentaries, we utilized two end-to-end sentence embedding models, the DistilBERT, USE-Large3, and RoBERTa, which generate embeddings. These embeddings are further utilized for training with dense neural networks (NNs) and LSTM techniques. Remarkably, it was perceived that the text classification accuracy for both models was consistently high, hovering around 98%. However, when the validation set is constructed with that of symbolic expression or emojis not included in the training dataset, a significant drop in accuracy for both models, plummeting to 75%, had been observed. Additionally, a distributed training methodology is utilized as a substitute for the conventional single-threaded model to enhance scalability. This approach resulted in a roughly 17% reduction in the runtime while maintaining accuracy. Lastly, in pursuit of explainable AI, the SHAP and LIME algorithms are employed to elucidate the model's behavior and assess any potential biases in the dataset. The creative use of advanced deep NN techniques customized for the delicate complexities of hybrid-data sentiment analysis indicates a significant leap forward. Our proposed work provides the critical gap in existing sentiment analysis methods, which primarily aimed at either text or emojis in isolation, thereby exploring more holistic understanding of sentiment in digital communications. Moreover, the application of explainable AI techniques, SHAP and LIME, to demystify model decisions emphasizes commitment to advancing transparent and trustworthy deep learning technologies in sentiment analysis.

Keywords: artificial intelligence; emojis; sentiment analysis; social networks

FOREX Publication
Open Access | Rapid and quality publishing

International Journal of
Electrical and Electronics Research (IJEER)
Review Article | Volume 12, Issue 4| Pages 1258-1263 | e-ISSN: 2347-470X

Comparison of SoC in Ni-MH and Lithium-Ion Battery for E-Vehicle

N Chinna Alluraiah[1*], V. Nandagopal[2], P. Veeramanikandan[3], Godfrey D[4], S. Meena[5] and G. Brindha[6]

[1]*Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, Andhra Pradesh, India; nandhu050577@gmail.com*

[2]*Department of Electrical and Electronics Engineering, School of Engineering, Mohan Babu University, Tirupati, Andhra Pradesh, India.*

[3]*Department of Electrical and Electronics Engineering, Dhanalakshmi Srinivasan college of Engineering and Technology, Mahabalipuram, Chennai, Tamil Nadu, India*

[4]*Department of Electronics and Communication Engineering, Dayananda Sagar University, Bengaluru, Karnataka, India.*

[5]*Department of Electronics and Instrumentation Engineering, St. Josephs's College of Engineering, Chennai, India.*

[6]*Department of Computer Science and Engineering, St. Joseph's College of Engineering, Chennai, India.*

***Correspondence:** N Chinna Alluraiah; *nandhu050577@gmail.com*

ABSTRACT- The current energy side of the battery is indicating in a percentage level is called state of charge (SOC). Nickel-metal hydride and lithium-ion batteries are a type of rechargeable battery. The chemical response at the positive electrode in nickel-metal hydride (NiMH) batteries is like that in nickel-cadmium (NiCd) batteries, as both use nickel oxide hydroxide NiO(OH). However, while NiCd cells use cadmium, NiMH batteries feature a hydrogen-absorbing alloy in their negative electrodes. NiMH batteries provide two to three times the capacity and a significantly higher energy density compared to NiCd batteries of the same size. The research was mainly focused on the aspect of SoC of Ni-MH and Lion batteries with operation of an electric vehicle with total weights of 600 kg was investigated using mat lab Simulink.

Keywords: SoC, Nickel–metal hydride battery, Lion battery, Electric vehicle, MATAB/Simulink.

ARTICLE INFORMATION

Author(s): N Chinna Alluraiah, V. Nandagopal, P. Veeramanikandan, Godfrey D, S. Meena and G. Brindha;

Received: 27/09/2024; **Accepted**: 28/10/2024; **Published**: 30/11/2024;
e-ISSN: 2347-470X;
Paper Id: IJEER 2709-28;
Citation: 10.37391/ijeer.120417
Webpage-link:
https://ijeer.forexjournal.co.in/archive/volume-12/ijeer-120417.html

Publisher's Note: FOREX Publication stays neutral with regard to Jurisdictional claims in Published maps and institutional affiliations.

1. INTRODUCTION

Electric vehicles are ahead popularity as a preferred mode of transportation. Experts anticipate that by 2030, electric vehicles may make up approximately 25% of all vehicles globally [1]. In E vehicles, the engine operates using fuel, while the motor is energized by a battery [2]. Repeated overcharging of a NiMH battery can cause the development of small crystals on the electrodes, which diminishes their ability to fully charge and leads to lower voltage. Conversely, undercharging can degrade the battery's performance, while overcharging can shorten its lifespan. To mitigate these problems, our cost-effective Battery Management System (BMS) prevents overcharging and protects against potential damage. Lithium-ion batteries, frequently used in electric bikes, provide consistent performance and high output. They are lighter, more compact, and more costly compared to traditional lead-acid batteries. Lithium-ion batteries is their capability for rapid charging and slow discharging, which enables quick vehicle recharges and extended usage. They also function well at elevated temperatures. With their lightweight construction and superior power-to-weight ratio, lithium-ion batteries typically deliver better performance compared to lead-acid batteries and some other options.

The primary objective of the research work was to assess the energy consumption of a vehicle fitted with a battery pack and to explore how the vehicle's overall weight influences its energy usage. An E_{drv+} is denoted as energy drawn from the battery when vehicle in operating is given by the *equation (1):*

$$E_{drv+} = \int_{t0}^{t1} V.I\ dt, \quad (1)$$

When the current *I* greater than 0

The E_{drv-} is denoted as the energy delivered to the battery when regenerative braking was occurred in the vehicle resolute by the *equation (2):*

$$E_{drv-} = \int_{t0}^{t1} V.I\ dt, \quad (2)$$

When the current *I* lesser than 0

The total energy is calculated by using *equation (3):*

$$E_{drv} = E_{drv+} + E_{drv-} \quad (3)$$

Vol. XVII & Issue No.11 November 2024
INDUSTRIAL ENGINEERING JOURNAL

IoT-Driven Automation for Streetlight Monitoring and Fault Detection

RASHEL SARKAR
SPANDAN KUMAR BORTHAKUR
GANESH CHALLA

Abstract:

The proposed system is an IoT-based street lighting monitoring solution designed to manage lighting, detect faults, and enable immediate corrections. This paper introduces a system capable of monitoring streetlights in real-time through a server connected to multiple controller units. The system provides real-time monitoring of various parameters, which are displayed on a local debugging unit interfaced with a microcontroller. Additionally, vital data is posted to a web server for centralized monitoring. The system employs an STC12C5A60s2 single-chip microcontroller, interfaced with light sensors (LDRs) to measure the ambient light levels. Based on the analyzed light intensity, the microcontroller generates control signals to regulate the lighting. These control signals activate a transistor, which in turn energizes the relay coil to switch the streetlight on or off.For testing purposes, the system utilizes LED lamps. The proposed solution integrates multiple sensors and leverages IoT technologies along with a web server for data management. Furthermore, the system is designed to interface with a cloud server, enabling centralized data storage for future analysis and optimization.

Keywords: Street lights; Internet of Things; STC12C5A60s2; Wi-Fi technology; Database Management System..

INTRODUCTION

An indispensable part of cities and towns, streetlights illuminate the streets during the dark or nights, provides a better connectivity of the places where we live and work, reduces traffic casualties and crimes on road. Governments and municipalities around the world have accepted its importance and guarantees for its normal operations without faults and unnecessary drainage of power during off-peak period. At present, the technologies are switched from basic to advance direction. Under the smart city initiatives, every technology is being upgraded for a better cause of health and environment. As far as street lighting is concerned, the traditional streetlights are being replaced by the LED street lights. The LED lamps has better advantages over the traditional one for the energy saving capability, emits no harmful gases, decrease maintenance, servicing and time management cost. Traditional streetlamps such as high pressure sodium street lamps (HPS) had a better efficiency in 1970s. With due course of time, with technology advancement LEDs have granted us to be a better option. When this LED lamps are coupled to smart systems, it can save up to 75-80% of power consumptions. An improper operation of streetlamps leads to dissatisfaction and pose threat to moving vehicles and pedestrians too. Additionally, the manual supervision of the faulty streetlights by the respective maintenance authority will however cost precious time and money. The smart systems comprising of remote monitoring and controlling is now widely used, that provides real time centralized data management. Wireless sensor network (WSN) is a recent smart technology that connects an information world to a physical world. WSN comprises of sensor nodes, sink nodes, internet and a user computer [1]. The wireless sensor network is very economical. For the street light management (monitoring and control), it requires a huge cost and labor intensive. Using these networks of wireless sensors in street light monitoring and fault detection have left us with better choice.

The proposed street lighting system aims for the real time data acquisition and monitoring, for an autonomous operation, economically feasible and an immediate remedy on complaint. The errors due to manual operation can be eliminated. This system is implemented with smart embedded system which will control and monitor the streetlights based on detection of fault. The proposed lighting system is mainly dedicated to the integration of sensors technology and controlling mechanism. The system is an effective method for monitoring large area, from remote areas without visiting the location and centrally stores the data for future analysis.

II.LITERATURE REVIEW

J Hill et al. [1] studied the system architecture analysis of wireless sensor network (WSN). They developed a small device that is representative of the class, design a tiny event-driven operating system, and show that it provides support for efficient modularity and concurrency-intensive operation. J.D Lee et al. [2] have designed a hardware for reducing uneasiness of handling and difficulty of maintenance in operating light control system using Zigbee communication technique. C Jing et al. [3] designed a system to study the control scope of each lamp, reduce electricity consumption and maintenance cost using wireless sensor network. C Lordache et al. [4] presented a paper on modern streetlight monitoring system, keeping control cabinets online all the time, the solution guarantees energy savings, due to the dimming option, traffic safety and lighting comfort. X. Shentu et al. [5] presented a paper on remote streetlight monitoring system based on wireless sensor network. The system automatically controls streetlights according to sunrise and sunset algorithm and light intensity Cleland et al. [6] studied the methods for monitoring and control of street lamp that includes monitoring a light level and Voltage level and adjusting a light level, estimating power consumption

Vol. XVII & Issue No.12 December 2024
INDUSTRIAL ENGINEERING JOURNAL

A MAXIMUM POWER POINT TRACKING TECHNIQUE FOR HYBRID SYSTEMS USING THE TRAPEZOIDAL RULE

P.BHASKARAPRASAD
K.V.RAMANANAIK
L.SUSHMITHA
A.VENUKUMAR
S.RASHMINI

Abstract:

A Maximum Power Point Tracking technique specifically designed for hybrid systems, utilizing the Trapezoidal Rule to enhance tracking accuracy and energy extraction efficiency. The proposed method dynamically estimates the power output from various energy sources and adjusts operating conditions to ensure optimal performance. By employing the Trapezoidal Rule, it enables precise identification of the maximum power point while minimizing oscillations and convergence time. The proposed technique significantly improves energy harvesting efficiency compared to conventional methods, making it a promising solution for integrating renewable energy in hybrid systems. By using MATLAB Simulink software 2024a.

Keywords: ***MPPT, Trapezoidal Rule, wind turbine systems, solar panel systems, WECS hybrid system.***

1. GANESH CHALLA[1], 2. Dr. M. DAMODAR REDDY[2]

Research Scholar, Dept. of EEE, S. V. University, Tirupati, A.P., India (1), Professor, Dept. of EEE, S. V. University, Tirupati, A.P., India (2)
ORCID: 1. 0000-0001-9683-5763; 2. 0000-0002-7113-5805

doi: 10.15199/48.2024.12.03

Slip Angle Controlled DTC of Open End Winding Induction Motor Drive Using Triple Randomized Decoupled PWM Based Acoustic Noise Mitigation for EV Application

Abstract. *Low acoustic noise, vibration, and effective DC link utilization are beneficial for Electric Vehicle (EV)s. Direct Torque Control of Induction Motor drives fulfil the demands of the EVs. However, at steady state, flux, torque ripples cause acoustic noise. From the stand point of human health and safety EV noise is required to reduce. This paper proposes a Triple Randomized Decoupled Random Pulsed Width Modulation schemes to suppress acoustic noise for Slip Angle Controlled DTC of an open-end winding induction motor drive for EV application.*

Streszczenie. *Niski poziom hałasu, wibracji i efektywne wykorzystanie łącza DC są korzystne dla pojazdów elektrycznych (EV). Bezpośrednia kontrola momentu obrotowego napędów silników indukcyjnych spełnia wymagania pojazdów elektrycznych. Jednakże w stanie ustalonym fale strumienia i momentu obrotowego powodują hałas akustyczny. Z punktu widzenia zdrowia i bezpieczeństwa ludzi konieczne jest ograniczenie hałasu pojazdów elektrycznych. W artykule zaproponowano schematy potrójnej losowej, oddzielonej losowej modulacji szerokości impulsu w celu tłumienia hałasu akustycznego dla kodu DTC sterowanego kątem poślizgu napędu silnika indukcyjnego z otwartym uzwojeniem do zastosowań w pojazdach elektrycznych.*

Keywords: Acoustic Noise, Direct Torque Control, Electric Vehicle, Open End Winding Induction Motor.
Słowa kluczowe: Hałas akustyczny, bezpośrednia kontrola momentu obrotowego, pojazd elektryczny, silnik indukcyjny z uzwojeniem otwartym.

Introduction

An Electric Vehicle (EV) is a transportation vehicle that runs on electricity. It consists of a motor, gearbox system, and wheels. The electric propulsion system is the key component of an EV [1]. Induction motors (IMs) are commonly used in EVs because to their compact size, robustness, affordability, high velocity, and low maintenance requirements [2]. EVs gain benefits including as higher DC link use, lower acoustic noise, and less vibration. The Direct Torque Control (DTC) technology has proven its ability to meet the stringent needs of modern industries. Recently, there has been an increase in interest in employing DTC for EV applications [3] due to its ability to instantly regulate torque and eliminate the need for online calculations. However, it suffers from torque and flux fluctuations under stable operating conditions and variable frequency operation. The use of a Multi Level Inverter (MLI) can help lessen these fluctuations. The Dual Inverter (DI) topology for Open-End Winding Induction Motors (OEWIMs) [4] has gained popularity. It may find widespread use in EVs [5]. Space Vector Pulse Width Modulation (SVPWM) can avoid difficulties caused by varying switching frequencies. It can also increase the efficiency of the DC bus, which is critical for addressing the needs of EVs. SVPWM-based drives have inherent constraints such as high-frequency harmonics, EMI, acoustic noise, and vibration.

One drawback of SVPWM is that motor drives may vibrate and make noise due to the high-frequency harmonics generated by Voltage Source Inverters (VSIs). This is due to the fact that switching frequencies and human hearing frequencies frequently coincide [6,7]. The harmonics at the sidebands of the multiples of the switching frequency in the load current of the VSI. These harmonics have a high frequency and a narrow bandwidth, which makes the motor vibrate and produce noise in the narrow band that is uncomfortable for the operators. As a result, the introduction of noise pollution in the EV have raised serious concerns that affect productivity, public health, and safety. The switching frequency can be increased to a value higher than 20 kHz in order to reduce this restricted range of noise. However, it will result in higher switching losses [8], lower the conversion efficiency of the VSI, and reduce the distance that the EV can go. The Random Pulse Width Modulation (RPWM) technique is an effective choice for reducing narrow-band noise by dispersing the harmonics of the output voltage and current. This is accomplished by utilizing a constant switching frequency [9]. RPWM technology incorporates random variables into the control unit of the inverter. As per the statistical communication notion [10], when the switching signal undergoes random variation, the power device it controls amplifies the frequency spectrum of the switching harmonics. The RPWM techniques provide cost-effective and efficient solutions to the aforementioned issues [11].

Several researchers proposed various RPWM algorithms, such as Random Pulse Position Modulation (RPPM), Random Lead-Lag PWM (RLLPWM), Random Carrier Frequency Modulation (RCFM), Random Carrier PWM (RCPWM), Random Centre Displacement PWM (RCDPWM), and Random Zero Vector Distribution PWM (RZDPWM) [12,13,14,15]. Overall, RCFM performs better than RPPM in terms of PWM harmonic dispersion. However, the combined RCFM-RPPM technique provides the broadest range of frequencies. [12]. [16] compared the electrical and acoustic noise spectra of SVPWM to two Bus Clamping PWM (BCPWM) techniques, 30° BCPWM and 60° BCPWM. The study found that the former BCPWM scheme outperformed the later in terms of noise reduction. [17] investigated how modern BCPWM techniques affected the acoustic noise produced by motors. [18] investigated the Direct-Sequence Slow-Frequency Hopping method and RPWM for grid-connected Voltage Source Converters (VSCs) employing spread spectrum techniques. [19,20] described the discrete RPWM methods used to address harmonic dispersion. Previously, studies focused on the distribution of harmonics in VSIs and the increase of the noise spectrum in motor drives. Effor+-ts are currently being made to minimize the acoustic noise produced by the motors used in EVs [21,22]. [23] demonstrated the usage of a N-State RPPM-based SVPWM approach for harmonic dispersion. This article presents Decoupled switching mode-based Triple Randomized PWM approaches for the

micromachines

MDPI

Article

Pass-Transistor-Enabled Split Input Voltage Level Shifter for Ultra-Low-Power Applications

Chakali Chandrasekhar [1], Mohammed Mahaboob Basha [2,*], Sari Mohan Das [3], Oruganti Hemakesavulu [4], Mohan Dholvan [2] and Javed Syed [5,*]

[1] Department of ECE, Sri Venkateswara College of Engineering, Tirupati 517507, AP, India; dr.chandrasekhar.c@svcolleges.edu.in
[2] Department of ECE, Sreenidhi Institute of Science and Technology (Autonomous), Hyderabad 501301, TG, India; mohan.d@sreenidhi.edu.in
[3] Department of ECE, SVR Engineering College, Nandyal 518501, AP, India; mohandas.ece@svrec.ac.in
[4] Department of EEE, Annamacharya University, Rajampet 516126, AP, India; ohk@aitsrajampet.ac.in
[5] Department of Mechanical Engineering, College of Engineering, King Khalid University, Abha 61421, Saudi Arabia
* Correspondence: basha.m@sreenidhi.edu.in (M.M.B.); jjaffer@kku.edu.sa (J.S.)

Abstract: In modern ICs, sub-threshold voltage management plays a significant role due to its perspective on energy efficiency and speed performance. Level shifters (LSs) play a critical role in signal exchange among multiple voltage domains by ensuring signal integrity and the reliable operation of ICs. In this article, a Pass-Transistor-Enabled Split Input Voltage Level Shifter (PVLS) is designed for area, delay, and power-efficient applications with a wide voltage conversion range. The represented low-power LS structure is a general blend of both pull-up and pull-down networks that perform level-up or level-down shifts. The proposed PVLS is incorporated with the multi-threshold CMOS technique and a load-balancing driving split inverter to limit high static current, leakage power, and performance degradation. The schematic structure could be able to convert voltages from low to high as well as high to low. The architecture design has the lowest silicon area. The implementation of the proposed design was taken under 55 nm CMOS technology. The represented LS could be able to convert voltage ranges between 0.3 V and 1.3 V, which has a dynamic power of 2.00 nW. The overall propagation delay of the LS is 90 ps and an area of 7.66 μm^2 for an input frequency of 1 MHz.

Keywords: low threshold voltage; power-efficient; sub-threshold operation; multi-threshold CMOS; IoT applications

check for updates

Academic Editor: Piero Malcovati

Received: 9 December 2024
Revised: 28 December 2024
Accepted: 30 December 2024
Published: 5 January 2025

Citation: Chandrasekhar, C.; Basha, M.M.; Das, S.M.; Hemakesavulu, O.; Dholvan, M.; Syed, J. Pass-Transistor-Enabled Split Input Voltage Level Shifter for Ultra-Low-Power Applications. *Micromachines* **2025**, *16*, 64. https://doi.org/10.3390/mi16010064

Copyright: © 2025 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

In the upward era of a digital world, the demand for low power from battery-operated devices such as wireless sensors, IoT devices, and mobile phones has been rising tremendously [1–3]. For the conservation of battery life span, there is a huge demand for low-power circuits. The digital systems functioning with diverse blocks with multiple supply voltages demand the voltage level shifting of the signals. This could be achieved with voltage LSs, which can voltage-shift low levels and deep sub-threshold-level voltages to high levels for the consequent block. The multiple supply voltages are used to maintain performance and power trade-off. MSVs are extensively used in systems on chips. In such systems on chips, LSs are needed to interconnect these logic devices across different supply voltages. Therefore, there might be a huge number of LSs in a block. So, there might be an increased delay, area, and power consumption [4–6]. In this article, power-efficient

Check for updates

Wiley
International Transactions on Electrical Energy Systems
Volume 2025, Article ID 2242749, 28 pages
https://doi.org/10.1155/etep/2242749

WILEY

Review Article

An Overview of Remaining Useful Life Prediction of Battery Using Deep Learning and Ensemble Learning Algorithms on Data-Dependent Models

Sravanthi C. L.,[1] Chandra Sekhar J. N.,[1] N. Chinna Alluraiah,[2] Dhanamjayulu C.,[3] Harish Kumar Pujari,[4] and Baseem Khan[5]

[1]*Department of Electrical and Electronics Engineering, Sri Venkateswara University, Tirupati, Andhra Pradesh, India*
[2]*Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, Andhra Pradesh, India*
[3]*School of Electrical Engineering, Vellore Institute of Technology, Vellore 632014, India*
[4]*School of Electrical and Electronics Engineering, Cambridge Institute of Technology, K. R. Puram, Bengaluru 560036, Karnataka, India*
[5]*Department of Electrical and Computer Engineering, Hawassa University, Hawassa 05, Ethiopia*

Correspondence should be addressed to Dhanamjayulu C.; dhanamjayulu29@gmail.com and Baseem Khan; baseemahmedk@gmail.com

Received 29 July 2023; Revised 24 July 2024; Accepted 17 January 2025

Academic Editor: Kamran Iqbal

Copyright © 2025 Sravanthi C. L. et al. International Transactions on Electrical Energy Systems published by John Wiley & Sons Ltd. This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

There has been expeditious development and significant advancements accomplished in the electrified transportation system recently. The primary core component meant for power backup is a lithium-ion battery. One of the keys to assuring the vehicle's safety and dependability is an accurate remaining useful life (RUL) forecast. Hence, the exact prediction of RUL plays a vital part in the management of battery conditions. However, because of its complex working characteristics and intricate deterioration mechanism inside the battery, predicting battery life by evaluating exterior factors is exceedingly difficult. As a result, developing improved battery health management technology successfully is a massive effort. Because of the complexity of ageing mechanisms, a single model is unable to describe the complex deterioration mechanisms. As a result, this paper review is organised into three sections. First is to study about the battery degradation mechanism, the second is about battery data collections using mercantile and openly accessible Li-ion battery data sets and third is the estimation of battery RUL. The important performance parameters of distinct RUL forecast and estimation are categorised, analysed and reviewed. In the end, a brief explanation is given of the various performance error indices. This article classifies and summarises the RUL prediction by data-dependent models using machine learning (ML), deep learning (DL) and ensemble learning (EL) algorithms suggested in a last few years. The goal of this work in this context is to present an overview of all recent advancements in RUL prediction utilising all three data-driven models. This article is also followed by a categorisation of several types of ML, DL and EL algorithms for RUL prediction. Finally, this review-based study includes the pros and cons of the models.

Keywords: battery data sets; battery degradation; data-driven methods; ensemble learning; error indices; lithium-ion batteries; RUL prediction

Journal of Engineering and Technology for Industrial Applications

ITEGAM-JETIA

Manaus, v.11 n.51, p. 151-156. January/February., 2025.
DOI: https://doi.org/10.5935/jetia.v11i51.1334

ISSN ONLINE: 2447-0228

RESEARCH ARTICLE OPEN ACCESS

PERFORMANCE ASSESSMENT OF A MULTI-VERSE OPTIMIZER BASED SOLAR-PV INVERTER FOR GRID CONNECTED APPLICATIONS

Venkata Anjani Kumar G[1], M. Damodar Reddy[2], Chilakapati Lenin Babu[3] and Palepu Suresh Babu[4].

[1] Assistant Professor,Department of EEE, Rajiv Gandhi University of Knowledge Technologies- Ongole, Ongole,Andhra Pradesh, India.
[2] Professor,Department of EEE, S V U College of Engineering, Sri Venkateswara University - Tirupati, Andhra Pradesh, India.
[3] Assistant Professor,Department of EEE, RSR Engineering College - Kadanuthala, Nellore, Andhra Pradesh. India.
[4]Assistant Professor,Department of EEE, Annamacharya University – Rajampet, Andhra Pradesh, India.

[1]http://orcid.org/0009-0004-3111-0525, [2]http://orcid.org/0000-0002-7113-5805,
[3]http://orcid.org/0000-0001-9749-979X, [4]http://orcid.org/0000-0001-5786-1395.

E-mail: anjishelectrical@gmail.com, mdreddy999@rediffmail.com, ch.leninbabusvu@gmail.com, sureshram48@gmail.com.

ARTICLE INFO

Article History
Received: October 14, 2024
Revised: November 20, 2024
Accepted: December 01, 2024
Published: February 28, 2025

Keywords:
Ant Lion Optimization,
Grid Current and Voltage,
Multi-Verse Optimization,
PV Inverter Control,
Total Harmonic Distortion.

ABSTRACT

As the need for renewable energy has increased over the preceding decade or so, grid connected Photovoltaic (PV) systems have grown in prominence. Effective control strategies have become vital role in ensuring the optimal performance of these systems, particularly in the sense of Power Quality (PQ), efficiency, and grid synchronization. Hence, this paper proposes a Multi-Verse Optimizer (MVO) based inverter controlling stratage for enhancing the concert of a grid connected PV system. The MVO algorithm is employed to determine optimal gain values for both the current and voltage controllers of the PV inverter. The anticipated MVO-based controller is rigorously evaluated through MATLAB/ Simulink, considering key performance indicators such as grid current total harmonic distortion (THD), grid's voltage and current, and PV's voltage and current. With the aim of demonstrating the effectiveness of the suggested technique, a comparative study is carried out using a 3.5 kW grid connected PV system test case, benchmarking the MVO-based controller in contradiction to an Ant Lion Optimizer (ALO) based controller. The simulation outcomes conclusively validate the superior demonstration of the proposed technique as compared to ALO controller across all evaluated cases, highlighting its capability to achieve notable improvements in grid-connected PV system performance.

Copyright ©2025 by authors and Galileo Institute of Technology and Education of the Amazon (ITEGAM). This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

I. INTRODUCTION

Growing global energy demand and heightened environmental concerns have catalyzed a significant surge in the integration of energy from renewable sources, especially photovoltaic solar systems, into the existing power grid [1]. Grid-connected PV systems offer a multitude of advantages, such as improved energy sustainability, decreased carbon emissions, and less dependence on fossil fuels [2]. However, the efficient operation of these systems necessitates the implementation of sophisticated control strategies to ensure optimal power transfer, maintain grid stability, and meet the stringent grid interconnection standards [3],[4].

Inverters are essential to the operation of PV systems that are associated to the grid. These inverters feed alternating current (AC) that may be provided into the grid from the direct current (DC) electricity obtained by the PV panels [5]. The performance of the inverter directly impacts the overall efficiency, power quality, and stability of the PV system connected to grid [6-8]. Therefore, designing and implementing effective control strategies for PV inverters is of paramount importance. Proper control techniques are essential to ensure that the PV inverter operates at its optimal efficiency, injects high-quality power into the grid, and maintains grid synchronization and stability [9-11].

Recent advancements in the field of optimization algorithms have opened up new avenues for enhancing the performance of PV inverter control systems. In the literature, numerous control techniques have been suggested to enhance the grid-connected PV inverter's performance, including conventional linear controllers, such as Proportional-Integral (PI) and Proportional-Resonant (PR) controllers, as well as cutting-edge governing strategies proceeding on Fuzzy Logic (FL), Neural Networks (NN), and Optimization Algorithms (OA) [12], [13]. Among these, optimization algorithms have gained substantial

Vol. XVIII & Issue No.02 February 2025
INDUSTRIAL ENGINEERING JOURNAL

OPTIMAL AND EFFICIENT RELAY COORDINATION APPROACH FOR MULTI ZONE POWER SYSTEMS

M.SREEDHAR
A.HIMA BINDHU
V.VEENA

Abstract:

In this paper an efficient method for optimal overcurrent relay coordination is proposed. In the proposed method using genetic algorithm, an objective function (OF) is developed to solve the problem of miscoordination for six pairs short circuit fault currents. The new OF is improved to be simple, optimal and efficient. This technique takes into account the changes in network configuration. The efficiency of the proposed technique is demonstrated by comparing the results of two different networks namely typical 8-bus & IEEE 30-bus systems with those obtained using the recently developed techniques.

Keywords: ***Business, information systems, relational database, SQL, data mining***

INTRODUCTION

Directional overcurrent relays are commonly used as an economical means for protecting power distribution and sub transmission power systems. They are also used as backup protection in transmission systems. The selec- tion of appropriate settings of these relays under various systems conditions plays an important role in timely dis- connection of the faulty section of power systems [1].

Overcurrent (OC) relays normally have current setting multipliers ranging from 50 to 200 % in steps of 25 % which is referred to as plug setting (PS). PS for each relay is determined by two parameters: the minimum fault current and the maximum load current [2].

Many attempts have been made in the past to coordi- nate different types of OC relays with inverse time-current characteristic. The off-line approaches paved the way for the interactive methods. The absence of a systematic pro- cedure and efficient ordering of relays for coordination in all these methods resulted in repeated iterations through all the system relays. To tackle this problem, a heuris- tic scheme was proposed wherein relays were arranged in a sequence before they were considered for coordination. One more approach proceeded along this line of thought to obtain optimum starting points and an optimum re- lay sequence using the graph theory concepts. After that have also proposed actual coordination algorithms using the relative sequence matrix (RSM) and set of selection pairs (SSP) for the given transmission network has been developed. Research work on coordination of relays for specific area like radial distribution lines was also re- ported. Algorithms and methodologies for system-wide coordination were described. Need for subsystem coordi- nation may arise when it is felt to modify the settings of a part of the large system for proper coordination, due to some changes in the system. One such algorithm for subsystem coordination was presented in 1990 [3].

Regarding fault currents pairs, six primary and backup (P/B) relays current (six pairs) which include differ- ent fault locations and different effective line outages have been taken into account using ordinary coordina- tion method [4].

Six current pairs are obtained by putting faults on the places just close to the circuit breaker (CB) of the nearby bus and far end bus with and without lines outages plus high set instantaneous elements considera- tion. The summarized description of six current pairs is given in section 4 after equation 4.

Optimal coordination algorithms consider different techniques, both for interconnected and radial industrial networks [3]. Researchers have described various opti- mization methods to find the directional OC relay set- tings [3].

Due to the complexity of the nonlinear optimal pro- gramming techniques, the traditional optimal coordina- tion of overcurrent relays are commonly performed by linear programming (LP) techniques, including the sim- plex, two-phase simplex and dual simplex methods [3]. In these methods, the discrimination times (Δ) of P/B relays are considered as constraints. By both constraints and OF the solution is made.

In reference [1] optimal solution is made by constraints only as well as the comparison between the solution LP and traditional methods results. Minimization is inher- ently included by setting the time dials to minimum and then increasing their values gradually. It has been re- vealed that the new method is better than LP and LP method is better than the traditional ordinary method. In reference [5] which has compared LP method with ob- tained existing traditional method currently used in prac- tice, it has also been resulted that LP method is better than the existing traditional method. Therefore from ref- erences [1] and [5] the superiority of LP method compare to traditional methods currently used has been proven.

In reference [2], a method to recognize the constraints related to six current pairs that make the coordination problem infeasible and then decrease the complexity of the problem of O/C relay is given.

Intelligent optimization techniques such as GA can ad- just the settings of relays without mentioned difficulties. In these techniques the constraints are included as part of OF. The authors of reference [6] developed a method based on GA for

International Journal of Applied Power Engineering (IJAPE)
Vol. 14, No. 1, March 2025, pp. 155~162
ISSN: 2252-8792, DOI: 10.11591/ijape.v14.i1.pp155-162

Optimal distributed generator placement for loss reduction using fuzzy and adaptive grey wolf algorithm

Daruru Sarika[1], Palepu Suresh Babu[1], Pasala Gopi[1], Manubolu Damodar Reddy[2], Suresh Babu Potladurty[3]
[1]Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, India
[2]Department of Electrical and Electronics Engineering, Sri Venkateswara University College of Engineering, Tirupati, India
[3]Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Tirupati, India

Article Info

Article history:

Received Feb 6, 2024
Revised Sep 9, 2024
Accepted Oct 23, 2024

Keywords:

Allocation of DG
Fuzzy technique
Grey wolf technique
Power loss
Voltage-profile

ABSTRACT

This research provides a new methodology for locating distributed generation (DG) units in distribution electrical networks utilizing the fuzzy and adaptive grey wolf optimization algorithm (AGWOA) to decrease power losses and enhance the voltage profile. Everyday living relies heavily on electrical energy. The promotion of generating electrical power from renewable energy sources such as wind, tidal wave, and solar energy has arisen due to the significant value placed on all prospective energy sources capable of producing it. There has been substantial research on integrating distributed generation into the electricity system due to the growing interest in renewable sources in recent years. The primary reason for adding distributed generation sources for the network is to supply a net quantity of power, lowering power losses. Determining the amount and location of local generation is crucial for reducing the line losses of power systems. Numerous studies have been conducted to determine the best location for distributed generation. In this study, DG unit placement is determined using a fuzzy technique. In contrast, photovoltaic (PV) and capacitor placement and size are determined simultaneously using an adaptive grey wolf technique based on the cunning behavior of wolves. The proposed method is developed using the MATLAB programming language; the results are then provided after testing on test systems with 33-bus and 15-bus.

This is an open access article under the CC BY-SA license.

Corresponding Author:

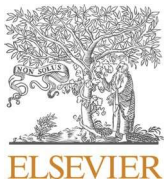
Palepu Suresh Babu
Department of Electrical and Electronics Engineering, Annamacharya University
Rajampet, Andhra Pradesh, India
Email: sureshram48@gmail.com

1. INTRODUCTION

Small-scale generation situated at or close to the load centers is referred to as "distributed generation" [1]. In the evolving landscape of power systems, distributed generation (DG) has emerged as a significant component in enhancing the reliability, efficiency, and sustainability of electricity networks. DG involves the placement of small-scale power generation units close to the load centers, providing numerous benefits including loss reduction, voltage improvement, and deferral of system upgrades. However, the optimal placement and sizing of these generators are crucial to maximize their potential benefits. Distributed energy, decentralized energy, embedded energy, on-site generation, scattered generation, and dispersed energy have all been other names.

There are numerous small-scale power generation methods used for distributed generation. Regardless of whether these technologies are linked to the electrical network, to increase the effectiveness of

Results in Engineering 25 (2025) 103674



Contents lists available at ScienceDirect

Results in Engineering

journal homepage: www.sciencedirect.com/journal/results-in-engineering



Techno-economic optimization and sensitivity analysis of off-grid hybrid renewable energy systems: A case study for sustainable energy solutions in rural India

Pujari Harish Kumar [a], N. Chinna Alluraiah [b], Pasala Gopi [b], Mohit Bajaj [c,d,e,*], Sunil Kumar P [a], CH. Naga Sai Kalyan [f], Vojtech Blazek [g]

[a] Department of Electrical and Electronics Engineering, Cambridge Institute of Technology, K.R Puram, Bangalore, Karnataka, India
[b] Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, Andhra Pradesh-516126, India
[c] Department of Electrical Engineering, Graphic Era (Deemed to be University), Dehradun-248002, India
[d] Hourani Center for Applied Scientific Research, Al-Ahliyya Amman University, Amman, Jordan
[e] College of Engineering, University of Business and Technology, Jeddah, 21448, Saudi Arabia
[f] Department of Electrical and Electronics Engineering, Vasireddy Venkatadri Institute of Technology, Guntur-522508, India
[g] ENET Centre, VSB—Technical University of Ostrava, 708 00 Ostrava, Czech Republic

ARTICLE INFO

Keywords:
Renewable energy
Net present cost
Techno-economic analysis
Cost of energy
HOMER
Hybrid renewable energy system
Sensitivity analysis
Sustainable energy
Solid waste management

ABSTRACT

In the twenty-first century, global energy consumption is rapidly increasing, particularly in emerging nations, hastening the depletion of fossil fuel reserves and emphasizing the vital need for sustainable and renewable energy sources. This study aims to analyze hybrid renewable energy systems (HRESs) that use solid waste to generate power, focusing on difficulties linked to intermittent renewable sources using a techno-economic framework. Employing the HOMER Pro software, prefeasibility analysis is performed to meet the energy needs of an Indian community. System architecture optimization depends on factors like minimizing net present cost (NPC), achieving the lowest cost of energy (COE), and maximizing renewable source utilization. This study evaluates the technical, economic, and environmental feasibility of a hybrid renewable energy system (HRES) comprising a 400-kW solar photovoltaic (PV) array, a 100-kW wind turbine (WT), a 100-kW electrolyzer, 918 number of 12V batteries, a 200-kW converter, a 200-kW reformer, and a 15-kg hydrogen tank (H-tank). This optimal configuration has the lowest NPC of $26.8 million and COE of $4.32 per kilowatt-hour, and a Renewable Fraction (RF) of 100 %. It can provide a dependable power supply and satisfy 94 % of the daily onsite load demand, which is 1080 kilowatt-hours per day. The required electricity is sourced to load demand entirely from renewable energy at the given location. Additionally, the study highlights the benefits of HRES in solid waste management, considering technological advancements and regulatory frameworks. Furthermore, sensitivity analysis is conducted to measure economic factors that influence HRES, accounting for fluctuations in load demand, project lifespan, diesel fuel costs and interest rates. Installing an HRES custom-made to the local environmental conditions would provide a long-lasting, reliable, and cost-effective energy source. The results show that the optimal HRES system performs well and is a viable option for sustainable electrification in rural communities.

1. Introduction

Energy is a primary worldwide issue in the 21st century, especially for developing nations. Fossil fuels are non-renewable energy sources used in various applications around the world. Mainly fossil fuels used for the production of power are diesel, coal, petroleum, and natural gas. The exponential rise in population and industrialization has resulted in a significant increase in global energy demand, hastening the depletion of fossil fuel deposits. As a result, it is critical to protect fossil fuels while investigating the use of renewable energy resources (RERs) as alternatives. Meeting the rapidly expanding energy demand only through conventional energy sources has become problematic. As a result, it is

* Corresponding author.
E-mail address: thebestbajaj@gmail.com (M. Bajaj).

https://doi.org/10.1016/j.rineng.2024.103674
Received 24 October 2024; Received in revised form 20 November 2024; Accepted 5 December 2024
Available online 11 December 2024
2590-1230/© 2024 The Author(s). Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Future Technology
Open Access Journal
ISSN 2832-0379

May 2025| Volume 04 | Issue 02 | Pages 11-21

Journal homepage: https://fupubco.com/futech

https://doi.org/10.55670/fpll.futech.4.2.2

Future Publishing LLC

Article

Hybrid boost-cuk converter with bat-chicken swarm-optimized PI controller for photovoltaic grid systems

S. Hema[1]*, S. Sreedevi[2], K. Harinath Reddy[3], Siddheswar Kar[4], Ananthan Nagarajan[5], S. Sengottaian[6]

[1]Department of Biomedical Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai-600062, India
[2]Department of Electrical and Electronics Engineering, Sriram Engineering College, Perumalpattu - 602 024, India
[3]Department of Electrical and Electronics Engineering, Annamacharya University, Rajampet, India
[4]Department of Electrical Engineering, Medi-Caps University, Indore, Madhya Pradesh, India
[5]Department of Electrical and Electronics Engineering, Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering College, Chennai 62, India
[6]Department of Electrical and Electronics Engineering, Viswam Engineering College, Madanapalle-517 325, Andhra Pradesh

ARTICLE INFO

Article history:
Received 10 February 2025
Received in revised form
14 March 2025
Accepted 26 March 2025

Keywords:
PV system, Hybrid Boost-Cuk converter,
Bat-Chicken swarm optimized PI controller,
BESS, 3ϕ VSI

*Corresponding author
Email address:
hemas04517@gmail.com

DOI: 10.55670/fpll.futech.4.2.2

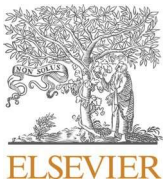
ABSTRACT

Recently, the reduction of greenhouse gas emissions and fuel consumption has been attended to by adopting the Photovoltaic (PV) system. Due to their intermittent nature, energy generated by PV systems is unpredictable for microgrid operation. Therefore, in this research, a novel hybrid Boost-Cuk converter is developed to efficiently increase the low voltage received from the PV system. Subsequently, the Bat-Chicken swarm optimized Proportional Integral (PI) controller is exploited to adjust the PI controller's parameters. Furthermore, the intermittency and instability of PV systems are addressed by adding a Battery Energy Storage System (BESS) to the microgrid to provide a steady and continuous power supply. This output is delivered to the grid via a Three Phase Voltage Source Inverter (3ϕ VSI), and the grid synchronization is accomplished with the aid of a PI controller. In order to validate the efficacy of the developed work, it is executed using the MATLAB/Simulink tool and compared with traditional topologies. The outcomes reveal that the developed research attains an efficacy of 93%, ensuring effective grid synchronization.

1. Introduction

More fossil fuels are used to produce power, which increases environmental pollution. In addition to being the primary source of electrical production worldwide, fossil fuels are the main contributors to environmental degradation [1]. To reduce the negative effects of using fossil fuels, renewable energy systems (RES) like solar, wind, biomass, and hydraulic energies have received much attention [2]. Clean energy, such as PV, has drawn more and more attention as the environmental pollution issues brought on by conventional fossil fuels become more noticeable [3-5]. Effectively converting solar into affordable power without wasting energy is the main goal of all PV systems. Due to its plentiful resources and pollution-free benefits, grid-tied PV power generation technology has experienced rapid expansion [6-7]. Large-scale PV power-generation networks' ongoing grid integration results in a decline in the system's short-circuit capacity, which lowers the voltage support capacity [8]. However, Energy Storage Systems (ESSs) have been installed to guarantee a reliable power supply due to the variable nature of PV production systems during the day and their unavailability at night [9-10]. Numerous meteorological factors, including solar radiation, temperature, wind speed, precipitation, humidity, dust deposition, air pressure, and technical factors like inverter loss and PV array losses, affect the performance of solar PV power stations [11-12].

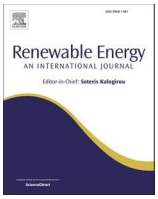
Renewable Energy 253 (2025) 123159



Contents lists available at ScienceDirect

Renewable Energy

journal homepage: www.elsevier.com/locate/renene



Optimizing energy management strategy for fuel cell hybrid electric vehicles: A hybrid FBPINN-MGO Approach

P. Satheesh Kumar [a,*], M. Pala Prasad Reddy [b], S. Muqthiar Ali [c], T. Devaraju [d]

[a] Department of Electrical and Electronics Engineering, Mailam Engineering College, Villupuram District, Mailam, 604304, Tamil Nadu, India
[b] Department of Electrical and Electronics Engineering, Institute of Aeronautical Engineering, Hyderabad, 500043, Telangana, India
[c] Department of Electrical and Electronics Engineering, Annamacharya Institute of Technology and Sciences, Annamayya District, Rajampet, 516126, Andhra Pradesh, India
[d] Department of Electrical and Electronics Engineering, Mohan Babu University / Vidyanikethan Engineering College, Tirupati, 517102, India

ARTICLE INFO

Keywords:
Driving cycle
Fuel economy
Motor controller
State of charge
Energy management strategy
Fuel cell hybrid electric vehicle

ABSTRACT

Traditional energy management strategies (EMS) for fuel cell hybrid electric vehicles (FCHEVs) often overlook driving cycle uncertainties from fluctuating traffic, impacting fuel economy, battery life, and system efficiency. This paper proposes a hybrid approach for optimizing FCHEVs by combining Finite Basis Physics-Informed Neural Networks (FBPINN) with the Mountain Gazelle Optimizer (MGO), also known as the FBPINN-MGO method. The goal is to maximize fuel economy, extend EV range, and prolong battery life by optimally distributing power between the fuel cell and battery for peak performance. The FBPINN model is used to predict the fuel economy of the FCHEV motor controller, while the MGO algorithm is utilized to optimize the control parameters for fuel economy. The MATLAB platform is employed to develop the proposed FBPINN-MGO method, and its performance is compared to that of other existing methods, such as the Deep Neural Network (DNN), Elman Neural Network (ENN), and Bayesian Regularization Neural Network (BRNN). The proposed FBPINN-MGO method achieves 95 % efficiency, 0.632 % error, and 0.954 % sensitivity, and lowers the computational cost to 0.0530 $/km, outperforming existing methods. The proposed method enhances efficiency, optimizes battery life, minimizes error propagation, and adapts to dynamic conditions for a robust FCHEV EMS.

1. Introduction

Fuel cell electric vehicle (FCHEV) commercialization is currently hindered by several technological challenges, such as hydrogen (H2) storage, fuel cell system (FCS) resilience, and the early development of H2 refueling infrastructure [1]. Many countries are currently paying close attention to environmental challenges, and the growing usage of fossil fuels is significantly exacerbating these issues [2]. Battery electric vehicles (EVs) are less prevalent than other forms of transportation due to their limited driving range and long charging times, despite their potential to achieve zero local emissions. One of the drawbacks of rule-based energy management systems (EMS) is that they may not always be the best choice for handling cycle changes [3]. Additionally, deep neural network-based nonlinear function approximation has limitations due to its high computational cost and the challenge of hyper-parameter tuning, which hinder its practical applicability [4]. As a result, forecasting driving conditions with high accuracy remains a contentious and difficult problem [30]. To optimize the disparities between the forecasted and actual output, the weights and bias vectors should be adjusted during the offline training phase [5].

Several prior studies published in the literature have focused on the EMS for FCHEVs by utilizing a variety of methods and approaches. Here is a review of a few of the works.

Jondhle et al., [6] have suggested battery life can be increased by aiming for low discharging and charging. The CNN model aided with energy management by utilizing the EV, battery, UC, and fuel cell characteristics. The suggested Squirrel Search Optimization (SSO) Algorithm, also known as CNN-SSO, was a standardized concept of the SSA method and was ideal for adjusting the weights of the Convolutional Neural Network (CNN) model to provide effective energy management.

Mian et al., [7] have suggested that an optimal nonlinear controller for a hybrid energy storage system (HESS) of hybrid electric vehicles (HEVs) based on batteries, fuel cells, super capacitors, and hybrid photovoltaic and electrochemical cells (HPEV). A motor, a DC-AC

* Corresponding author.
E-mail address: profsatheeshkumarp@gmail.com (P. Satheesh Kumar).

https://doi.org/10.1016/j.renene.2025.123159
Received 28 November 2024; Received in revised form 10 April 2025; Accepted 11 April 2025
Available online 2 May 2025
0960-1481/© 2025 Published by Elsevier Ltd.

Check for updates

Original Research Article

ENERGY EXPLORATION & EXPLOITATION

Energy Exploration & Exploitation
1–59
© The Author(s) 2025
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/01445987251337094
journals.sagepub.com/home/eea

Sage

Integrated thermal and battery management for electric vehicles: Experimental validation and simulation-based optimization of lithium-ion batteries

Pujari Harish Kumar[1], Gayathri Raju[2], Mohit Bajaj[3,4,5], Nallolla Chinna Alluraiah[6], Pasala Gopi[6], Sunil Kumar Pulumithi[1], Reshma Gopi Remabhai[7], Reshma Gopi[1] and Ievgen Zaitsev[8]

Abstract

Electric vehicles (EVs) are pivotal in reducing greenhouse gas emissions and achieving sustainable transportation goals. However, lithium-ion batteries (LIBs), the primary energy source for EVs, face critical thermal management, safety, and long-term efficiency challenges. This study proposes an integrated thermal and battery management system that combines a water–ethylene glycol-based liquid cooling mechanism with high-conductivity copper tubing to enhance LIB performance, longevity, and safety. Through COMSOL multiphysics simulations, this study examines LIB thermal behavior under varying operational conditions. The results indicate a 20% reduction in temperature peaks, with the battery maintaining an optimal temperature range of 15°C to 35°C, thus mitigating the risks of thermal runaway. Experimental validation using infrared thermography and thermal imaging confirms the system's efficiency, showing a maximum recorded battery

[1]Department of Electrical and Electronic Engineering, Cambridge Institute of Technology, Bengaluru, Karnataka, India
[2]Department of Electrical and Electronic Engineering, MVJ College of Engineering, Bangalore, Karnataka, India
[3]Department of Electrical Engineering, Graphic Era (Deemed to be University), Dehradun, India
[4]Hourani Center for Applied Scientific Research, Al-Ahliyya Amman University, Amman, Jordan
[5]Department of Electrical Engineering, Graphic Era Hill University, Dehradun, India
[6]Department of Electrical and Electronic Engineering, Annamacharya University, Rajampet, Andhra Pradesh, India
[7]School of Electrical Engineering, Vellore Institute of technology, Vellore, Tamil Nadu, India
[8]Department of Theoretical Electrical Engineering and Diagnostics of Electrical Equipment, Institute of Electrodynamics, National Academy of Sciences of Ukraine, Beresteyskiy, Ukraine

Corresponding author:
Ievgen Zaitsev, Department of Theoretical Electrical Engineering and Diagnostics of Electrical Equipment, Institute of Electrodynamics, National Academy of Sciences of Ukraine, Beresteyskiy, 56, Kyiv 03057, Ukraine.
Email: zaitsev@i.ua

Creative Commons CC BY: This article is distributed under the terms of the Creative Commons Attribution 4.0 License (https://creativecommons.org/licenses/by/4.0/) which permits any use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access page (https://us.sagepub.com/en-us/nam/open-access-at-sage).

Impact of Forecast Time-Step on PV Production Accuracy Using Machine Learning for Micro-Grid Efficiency

Dr. P.R. Sudha Rani[1], Dr. S. Ajit[2], Dr. M. Shunmugasundaram[3], Dr. S. Gangadharan[4], Swetha Mareddy[5], Dr. R. Senthamil Selvan[6], Dr. M. Prabha[7]

[1]*Professor, Department of CSE, Shri Vishnu Engineering College for Women, India*
[2]*Professor, Department of MBA, St. Joseph's College of Engineering, India*
[3]*Assistant Professor, Department of MBA, St Joseph's College of Engineering, India*
[4]*Associate Professor, Department of Master of Business Administration, St. Joseph's College of Engineering OMR, India*
[5]*Department of Electrical and Electronics Engineering, Assistant professor, Annamacharya University, India*
[6]*Associate Professor, Department of ECE, Annamacharya Institute of Technology and Sciences, India*
[7]*Assistant Professor, Department of ECE, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India*
Email: sudharani.p@gmail.com

Abstract: Efficient energy management solutions are becoming more important with emergence of micro-grids that include photovoltaic generation & storage. Their prediction of energy output over the near to long term is an important part of their work. An essential parameter influencing the forecast's accuracy, optimum control time discretisation, efficiency, and computing load is the forecast time-step. This trade-off is measured by putting four machine learning (ML) forecast methods through their paces on two different sites, with time-steps ranging from 2 to 60 minutes as well as horizons from 10 minutes to 6 hours. The methods are evaluated on both horizontal and tilted global irradiance charts, depending on the availability of data. All of the methods show comparable findings, which show that for predictions less than an hour and between one and six hours, the error measure may be decreased by up to 1.9% every minute on the time-step, and by up to 2.8% every ten minutes. Additionally, it is demonstrated that for short-term horizons, it could be beneficial towards make high-resolution forecasts & then average results at time-step required by energy control scheme.

Keywords: Micro-Grid, PV Generation, Accuracy Forecasting, Machine Learning, Energy Control System.

1. Introduction

Rapid expansion has led to a photovoltaic (PV) industry that will top 627 GWp by 2020, with a further 115 GWp added the following year. Globally, PV accounts for 2.7% to 3.2% of the energy output; however, this varies greatly from country to country, with Honduras accounting for 14.9% and Norway for 0.2%. The grid operators have issues due to the intermittent nature of PV as its contribution grows [1]. This calls for complicated operations to balance production

ME-1

INDERSCIENCE Online

Journal Home Current Issue Previous Issues

NO ACCESS

Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT

B. Venkatesh, Mudassir Khan, J. Chinna Babu, C.H. Nagaraju and R. Madhan Mohan

Published Online: 2 Oct 2024

Abstract

In this study, the performance and emissions of Al_2O_3 alkaline cottonseed biodiesel-powered compression ignition engines were predicted. An experiment was conducted using different biodiesel blends made from cottonseed oil under various loading conditions. Biodiesel was produced using ethanol and Cao-mg/Al_2O_3 as catalysts through the transesterification process and blended with diesel to produce CBDN10, CBDN20, CBDN30, and CBDN40. The CBDN20 blends showed an evident reduction in fuel consumption by 8% and a 12% improvement in thermal efficiency at high static thrust. The use of these blends resulted in minimal CO, CO_2, and NO_x emissions from engines. These emissions were monitored by an IoT system and analysed with gas analysers, which revealed CBDN20's ability to reduce nitrogen oxide and hydrocarbon emissions compared to diesel. Additionally, CBDN20 demonstrated improved thermal efficiency and reduced brake-specific fuel consumption compared to the other blends.

Keywords

compression ignition engine, cotton seed oil, emission, IoT, performance

Journal of Physics: Conference Series **2837** (2024) 012071 doi:10.1088/1742-6596/2837/1/012071

Optimization of Process Parameters In Wire-Edm for Stainless steel -304 By Using Grey-Relational Analysis

[1]N Deepthi [2]N Keerthi [3]K Nagamani [4]S.MDSaleemuddin [5]M.Dilip Kumar

[1] Department of Mechanical Engineering, Annamacharya Institute of technology & Sciences, (Autonomous)Rajampet
[2] Department of Mechanical Engineering, Annamacharya Institute of technology & Sciences, (Autonomous)Rajampet
[3] Department of Mechanical Engineering, Annamacharya Institute of technology & Sciences, (Autonomous)Rajampet
[4] Department of Mechanical Engineering, Annamacharya Institute of technology & Sciences, (Autonomous)Rajampet
[5]Department of Electrical and Electronic Engineering, MLR Institute of Technology (Autonomous), Dundigal, Hyderabad, Telangana

Abstract: A particular type of thermoelectric machining called wire electric release machining (WEDM) can leave behind intricate geometries or varying degrees of hardness"The Wire Electro Discharge Machining (WEDM) technique holds significant importance in the precision cutting of intricate and complex component shapes across all conductive materials.". Appropriate modeling is necessary to enhance the machining economics and product accuracy of wed med parts. Numerous researchers have already made attempts in this direction. Brass wire is used as the electrode in the current investigation and stainless steel alloy 304 as the work material. Variations are made to parameters including wire feed, servo voltage, pulse on/off duration, and material removal rate (MRR) in order to optimize surface roughness (SR).Various process parameters were used to machine the work material .
Keywords: The surface hardness, Cabel discharge during machining, Material Removal Rate, and Grey connection evaluation.

1.Introduction

Since their discovery by an English scientist in the 1770s, EDM machining techniques have been in use. It wasn't until 1943 that Russian scientists figured out how to control the erosive effects of the technology and use it for milling that Electrical Discharge milling became fully utilized. Joseph Priestly observed that EDM machining was imprecise and prone to malfunctions when it was originally introduced in 1770. In the mid-1970s, wire EDM became a practical technique and contributed to the development of the modern metalworking sector. the middle of the 1980s. The EDM techniques were implemented using a machine tool. Due to this change, EDM became more appealing and accessible than traditional machining techniques.

Non-conventional energy sources such as sound, light, mechanical, chemical, electrical, electrons, and ions are used in the new manufacturing approach. The development of harder and more difficult to machine materials, which find wide application in aerospace, nuclear engineering, and other industries due to their high strength to weight ratio, hardness, and heat resistance qualities, has been witnessed as a result of industrial and technological growth. Novel

Content from this work may be used under the terms of the Creative Commons Attribution 4.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.
Published under licence by IOP Publishing Ltd

Deploying Healthcare Monitoring System For Elderly Patient Care using IoT and Neural Network Techniques

Publisher: IEEE Cite This PDF

Jagendra Singh ; Neha Garg ; Ravikumar Sethuraman ; Soumi Ghosh ; A Hemantha Kumar ; Raju Kolluri **All Authors**

56
Full
Text Views

Abstract

Document Sections

I. Introduction

II. Architecture of IoT in health sector

III. PROPOSED RESEARCH

IV. Result and discussion

V. Conclusion

Authors

Figures

References

Keywords

Metrics

More Like This

Abstract:
Utilizing Internet of Things (IoT) technology in the healthcare sector can revolutionize the care provided to individuals. This study illustrates the application of IoT in ensuring continuous healthcare for elderly patients, particularly focusing on scenarios like epidemiology in rehabilitation centers, intensive care units (ICU), and home health care. The research integrates a variety of sensors, machine learning algorithms, and cloud computing to establish a healthcare system driven by IoT. With a participant pool of 50 individuals, including both healthy adults and those with various ailments, the study employs Short-Term Memory (LSTM), decision trees, and Artificial Neural Network (ANN) models to analyze sensor data, specifically temperature and heart rate measurements. The primary objective is to identify uncertainties and facilitate timely interventions. Results indicate that ANN surpasses LSTM and tree models in parameter estimation, displaying superior accuracy and F1 scores in anomaly detection while minimizing false negatives. This use of predictive ability has the chance of reforming treatment through early detection and administration of treatments. This research, in short, exemplifies the importance of integrating prognostic analytics in health systems that support IoT; in other words, it enables continuous monitoring, forecasting, and access to care requirements concerning changing forms of illness. From a scientific perspective, this work is seen as being proactive because it adopts green medical materials and uses IoT-based methods so that control performance may be improved for the patients.

Published in: 2024 IEEE 3rd World Conference on Applied Intelligence and Computing (AIC)

Date of Conference: 27-28 July 2024

DOI: 10.1109/AIC61668.2024.10731003

Date Added to IEEE *Xplore*: 29 October 2024

Publisher: IEEE

ISBN Information:

Conference Location: Gwalior, India

Sign in to Continue Reading

Authors

Figures

References

Keywords

Metrics

International Journal of Engineering Trends and Technology
ISSN: 2231–5381 / https://doi.org/10.14445/22315381/IJETT-V72I8P133

Volume 72 Issue 8, 353-363, August 2024
© 2024 Seventh Sense Research Group®

Review Article

Smart Materials Revolutionizing Automotive Technology: Applications, Challenges, and Future Directions

Panta Srihari Reddy[1], Munjuluru Sreenivasulu[1], Kishorekumar Nandyala[2], Jayakiran Reddy Esanakula[3]

[1]*Department of Mechanical Engineering, NBKR Institute of Science and Technology, Tirupati, AP, India.*
[2]*Department of Mechanical Engineering, Annamacharya Institute of Technology and Sciences, Rajampet, AP, India.*
[3]*Department of Mechanical Engineering, Sreenidhi Institute of Science and Technology, Hyderabad, Telangana, India.*

[2]*Corresponding Author : kishorekumarnandyala@gmail.com*

Received: 29 April 2024 Revised: 10 July 2024 Accepted: 30 July 2024 Published: 28 August 2024

Abstract *- This review paper discussed the incorporation of smart materials within the automotive industry, outlining their applications, associated difficulties, as well as future scope. SMAs, Piezoelectric materials, MR Fluids, EAPs, and Thermoelectric materials are smart materials with exceptional properties that allow them to actively react to external environmental stimuli. These materials are applied in structural elements, sensors and actuators, energy management systems, as well as passenger and driver convenience and safety. Despite their potential to boost vehicle safety and environmental conservation, some challenges could deter their massive adoption. These include system integration issues, scalability considerations, and constraints associated with their implementation. These barriers can be overcome and these materials and their potential can be explored in full through interdisciplinary work and rapid technological development to provide a more optimized driver experience as well as environmental preservation. Potential future research in this direction is associated with material development, implementation in new fields, and applied technologies such as AI, machine learning, and autonomous driving.*

Keywords *- Smart materials, Piezoelectric materials, Magneto-rheological fluids, Electroactive polymers, Thermoelectric materials, Automobiles.*

1. Introduction

The last few years have moved the automotive industry from known to unknown after the unravelled inclusion of smart materials into vehicle designs and manufacturing. Smart materials embed special functionalities and properties that have defined new domains through which vehicle performance, comfort, and safety would be improved. This section intends to provide a little brief of what the world of smart materials has done to the automotive industry.

1.1. Overview

Smart materials, also known as intelligent or responsive materials, are a group of materials able to alter their qualities due to external agents across a wide spectrum [1]. The external agents may come in the form of changes in temperature, stress, electric or magnetic fields, light, and so on [2]. The favourable alteration of the properties of such structures under certain conditions has multiple applications. They are used as actuators and in the concept of self-healing [3]. In addition, they represent ideal materials in the creation of sensors and actuators [4]. Smart materials can be incorporated into structural systems and make the system sensitive to the surroundings and phenomena changes. Smart materials are widely used in the application of product health monitoring. In addition, it plays a crucial role in intelligent manufacturing and processing. In both industrial and academic usage, the applications of smart materials such as polymers and fibres have increased because of their dynamic and adaptive attributes [5]. Generally, these materials are capable of sensing a variety of factors, including temperature, electric and magnetic fields, deformation, pH, and enzymes [5].

1.2. Significance in Automotive Industry

Smart materials have made their way into the automotive industry, with several innovations addressing not only the ever-changing requirements for modern vehicles but also some long-lasting challenges for manufacturers. Trying to optimize fuel consumption, improve safety features, and find an eco-friendly replacement can become outdated, and these new solutions transform the industry and ensure that change is possible. Smart materials, including SMAs and piezoelectric materials, present an opportunity to redefine how automobiles


This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/)

INDERSCIENCE Online

Journal Home Current Issue Previous Issues

Home → European Journal of Industrial Engineering → Vol. 18, No. 5

NO ACCESS

Pragmatic simultaneous scheduling of machines, AGVs, tool transporter and tools in a multi machine FMS using flower pollination algorithm

[redacted]. Sivarami Reddy, D.V. Ramamurthy, K. Prahlada Rao and M. Padma Lalitha

Published Online: September 2, 2024 · pp 728-771 · https://doi.org/10.1504/EJIE.2024.140763

ABOUT

Abstract

This paper deals with machines, automated guided vehicles (AGVs), tool transporter (TT) and tools simultaneous scheduling in multi-machine flexible manufacturing system considering parts and tools transfer times for makespan minimisation. Only one copy of every tool type is made available due to economic restrictions and the tools are stored in central tool magazine that shares with and serves for several machines. TT and AGVs carry tools and jobs between machines. This simultaneous scheduling problem is highly complex in nature as it involves allocating tools, AGVs and associated trip operations including the dead heading and loaded trip times of both AGVs and TT to job-operations, job operations sequencing on machines. This paper presents nonlinear mixed integer programming formulation to model this problem and flower pollination algorithm (FPA) is employed to solve it. The results have been tabulated, analysed and compared. An industrial problem in manufacturing company is used for verification. [Received: 18 October 2020; Accepted: 26 May 2023]

Keywords

flexible manufacturing systems, automated guided vehicles, AGVs, scheduling of jobs, TT and tools, optimisation techniques, flower pollination algorithm, FPA, makespan

ISSN: 0976-9102 (ONLINE)
DOI: 10.21917/ijivp.2024.0485

IMAGE PATTERN RECOGNITION WITH AN IMPROVISED DEEP LEARNING REGRESSION TECHNIQUE

D.K. Mohanty[1], P. Joy Kiruba[2], N. Ragunath[3], P. Kanagaraju[4] and Aditya Bommaraju[5]

[1]*Department of Mathematics, Government B.Ed. Training College, Kalinga, India*
[2]*Department of Computer Science and Engineering, B.S. Abdur Rahman Crescent Institute of Science and Technology, India*
[3]*Department of Mechanical Engineering, Annamacharya University, India*
[4]*Department of Computer Science and Engineering, Sri Shanmugha College of Engineering and Technology, India*
[5]*Blue Cross and Blue Shield of North Carolina, United States of America*

Abstract

Advancements in image pattern recognition have revolutionized diverse domains such as healthcare, autonomous systems, and security. Despite these advancements, existing deep learning techniques often encounter challenges in achieving high accuracy, particularly when handling complex image datasets with significant noise or variations. The need for an enhanced approach that balances computational efficiency with superior predictive performance has become critical. This study introduces an Improvised Deep Learning Regression Technique based on InceptionNet for robust image pattern recognition. The proposed method incorporates optimized inception modules with tailored hyperparameter tuning to address limitations in feature extraction and pattern generalization. By employing an adaptive learning rate and advanced regularization mechanisms, the model achieves better performance on large-scale, heterogeneous datasets. The experimental evaluation was conducted using publicly available image datasets, including CIFAR-10 and ImageNet, to ensure comprehensive benchmarking. The results show significant improvements over existing methods. The proposed InceptionNet model achieved an accuracy of 96.5% on the CIFAR-10 dataset and a mean absolute error (MAE) reduction of 15.2% compared to traditional regression techniques. On the ImageNet dataset, the model recorded an accuracy improvement of 7.8% and reduced training time by 12%, validating its computational efficiency. The incorporation of deep inception modules contributed to precise recognition of intricate patterns and subtle variations, making the technique suitable for real-time applications.

Keywords:

Image Pattern Recognition, InceptionNet, Deep Learning, Regression Technique, Computational Efficiency

1. INTRODUCTION

Image pattern recognition plays a pivotal role in numerous domains, ranging from healthcare diagnostics to autonomous vehicle navigation and security surveillance. The ability to analyze and interpret complex image data has been significantly advanced by deep learning methodologies, which leverage large datasets and high computational power to achieve unprecedented levels of accuracy. Among these, Convolutional Neural Networks (CNNs) have been widely adopted due to their hierarchical feature extraction capabilities, with architectures like ResNet and VGGNet providing strong baselines for image recognition tasks [1]-[3]. Despite these successes, the ever-increasing complexity and size of real-world datasets present ongoing challenges for improving accuracy, generalization, and computational efficiency.

The primary challenges in image pattern recognition include handling high-dimensional data, addressing noise and variability in images, and optimizing model performance without excessive computational costs. Traditional models struggle with overfitting when faced with noisy datasets or variations in lighting, scale, and orientation. Furthermore, achieving a balance between computational efficiency and accuracy remains a significant concern, particularly for applications requiring real-time predictions [4]-[7]. Another critical issue is the interpretability of deep learning models, which often function as black-box solutions, making it difficult to understand their decision-making processes and improve them further.

Existing methods for image pattern recognition often fall short in handling large-scale, heterogeneous datasets while maintaining computational efficiency. The lack of a unified approach that combines robust feature extraction, scalability, and computational efficiency necessitates the development of an improved methodology capable of addressing these gaps [8].

- To develop a deep learning-based regression technique that enhances feature extraction and pattern recognition in complex datasets.
- To achieve superior accuracy and computational efficiency compared to existing state-of-the-art methods.

This study introduces an Improvised Deep Learning Regression Technique based on InceptionNet, designed to tackle the challenges of existing models. The method employs optimized inception modules to enhance feature extraction capabilities and mitigate overfitting. Adaptive learning rates and advanced regularization mechanisms are integrated into the architecture to improve generalization and computational efficiency.

The contributions include

- An enhanced InceptionNet architecture tailored for image pattern recognition tasks, incorporating modifications for improved scalability and efficiency.
- Experimental validation on diverse datasets, demonstrating significant performance gains in terms of accuracy, mean absolute error reduction, and training time.
- A comparative analysis highlighting the advantages of the proposed method over conventional CNNs, such as ResNet and VGGNet, in handling heterogeneous datasets.

2. RELATED WORKS

Deep learning has transformed the field of image recognition, with numerous studies exploring innovative architectures and optimization strategies. Convolutional Neural Networks (CNNs) remain a cornerstone of image recognition due to their ability to learn hierarchical features. Notable architectures such as ResNet

Early Enhancements within IoT Technology Integration for Ecological, Security, and Economic Auditing in Underground Mines

Publisher: IEEE

Cite This

J. Chinna Babu ; Lakshmi Sowjanya Koneru ; Adarsh Kumar ; B Venkatesh

17
Full
Text Views

Abstract
Authors
Figures
References
Keywords
Metrics
More Like This

Downl
PDF

Abstract:
Underground mining safety and environmental monitoring have all benefited greatly from the widespread application of Internet of Things (IoT) technology. The many sensors... **Show More**

Metadata

Contents

I. Introduction

The web or " Network of Devices" (IoT) describes the connection of equipment (or "things") that interact with each other one another through the Internet. Applications for IoT are widely diverse. The network of devices (IoT) is a game-changing breakthrough in which all sensor data will stored in the cloud for easy access. This update also includes motors and sensors for gathering information transmission via the web. We employ Cloud-based computing not just for data storage but also for data collection, analysis, and visualization. Such a developing technology has several Internet of Things applications, including agriculture, healthcare, smart homes, and other areas to improve the effectiveness of the current systems. The cloud's primary features are immediate delivery of services, universal accessibility, combining [Sign in to Continue Reading] ound coal mining safety is an imminent threat due to toxic substances such as ash from coal and methane, which have caused a significant number of mine-related disasters to be developed. The study highlights the importance of real-time tracking

Need
Full-Text
access to IEEE *Xplore*
for your organization?
CONTACT IEEE TO SUBSCRIBE >

ONNS: Experimental Evaluation of Human Smile Recognition Based on Image Processing Assisted Optimized Neural Network Strategy

Publisher: IEEE

Cite This

K. Murugan ; V. Srilakshmi ; A. Swathi ; Sunheriya Neeraj ; Suha Afaneh ; C. Thirupathaiah

19
Full
Text Views

Abstract
Authors
Figures
References
Keywords
Metrics
More Like This

Downl
PDF

Abstract:
This paper presents the experimental evaluation of human smile recognition using an image processing-assisted optimized neural network strategy (ONNS). The primary object... **Show More**

Metadata

Contents

I. Introduction

Evaluation of Human Smile Recognition based on Image Processing is a huge breakthrough in the field of computer vision and artificial intelligence by integrating technology with the sobriquet human emotion [1] [2]. Smiling is an expression that unites all ove ns of joy, friendliness and social unity. that is why smiling is an extremely importa he potential for the development of

Sign in to Continue Reading

Need
Full-Text
access to IEEE *Xplore*
for your organization?
CONTACT IEEE TO SUBSCRIBE >

Experimental Procedure to Develop an IoT Based Smart Home Automation System Using Intelligent Sensors Association

Publisher: IEEE

Cite This

S. Niranjana ; R. Sai Lavanya ; S. Sangeethapriya ; Nakka Nagaraju ; B. Venkata Prasanth ; C. Karthikeyan

123
Full
Text Views

Abstract
Authors
Figures
References
Keywords
Metrics
More Like This

Downl
PDF

Abstract:
This paper presents the development and implementation of an IoT-based Smart Home Automation System using intelligent sensors. The system integrates various sensors, such... **Show More**

Metadata

Contents

I. Introduction

Smart home is the residence using the sophisticated technology and the automation systems to increase comfort and security and save energy. Smart homes bring those ability to manage our environment seamlessly and remotely, by integrating the devices and ap[illegible]ntrol system. In recent years, this

Sign in to Continue Reading

Need
Full-Text
access to IEEE *Xplore*
for your organization?
CONTACT IEEE TO SUBSCRIBE >

Empirical Evaluation of AI Based Oral Cancer Identification Scheme Using Learning Assisted Medical Image Processing Scheme

Publisher: IEEE

Cite This

Vaijayanthi. S ; G. Charulatha ; J. Senthil Murugan ; Lakshmi N ; E. Thenmozhi ; S. Mahaboob Khan

48
Full
Text Views

Abstract
Authors
Figures
References
Keywords
Metrics
More Like This

Downl
PDF

Abstract:
Early detection is essential for enhancing patient outcomes, as oral cancer continues to be a substantial health challenge. This manuscript introduces the Optimized Neura... **Show More**

Metadata

Contents

I. Introduction

Oral cancer, which is sometimes referred to as cancer of the oral cavity, is a form of cancer that manifests itself directly in the tissues of the mouth. There are cancers of the tongue that are included in this category, in addition to cancers of the lips, the gums, tongues, floor of the mouth, roofs of the mouth, as well as inner lining of the cheeks. A disorder that is characterized by malignant growths in the oral cavity, oral cancer is a dangerous ailment that has the potential to be life-threatening. Additionally, it has the potential to spread to other regions of the mouth if it is not recognized and treated in a timely manner [1]–[3]. A higher chance of acquiring oral cancer is associated with: (i)

Tobacco; cigar, pipe, and chewing tobacco

Sign in to Continue Reading

Need
Full-Text
access to IEEE *Xplore*
for your organization?
CONTACT IEEE TO SUBSCRIBE >

Discover Applied Sciences

Research

Experimental investigation on vibration characteristics and damping factor of coir fiber reinforced polyester composite material

K. V. Nikhil[1] · S. Ramasubramanian[2] · Avinash Gudimetla[3] · Gunti Amarnath[4] · G. Sathishkumar[1] · R. Pugazhenthi[1] · Mithilesh K. Dikshit[5] · Vimal Kumar Pathak[6]

Received: 20 December 2024 / Accepted: 21 April 2025
Published online: 07 May 2025
© The Author(s) 2025 OPEN

Abstract
This research aimed to investigate the composite material composed of polyester with randomly oriented short coir fibers with a length of 10 mm and varying weight percentages from 5 to 20%. The composite material was fabricated by the hand layup method. The tensile strength, flexural strength, hardness, impact strength, free vibration analysis, and damping characteristics were studied; the SEM images were used to analyze the fractured surface of the composite specimens. The current empirical study identified a conspicuous association between the gradual escalation in fiber content for the natural frequency and the damping attributes of the composite material. The test results showed that the composite with 15% coir fibers worked best for several studies examining characteristics over a wide range of temperatures and frequencies. Coir-based composite material yields a natural frequency of 61,862 Hz and a maximum damping ratio (ζ) of 0.29592, indicating enhanced rigidity and vibration absorption capabilities. The damping factor (tan δ) reached a notably low value of 0.360 at a 10 Hz frequency with 15 wt.% fiber content, demonstrating improved energy dissipation. The results show that polyester composites containing 15% wt.% coir fibers have the best mechanical and damping properties, making them a sustainable choice for industrial uses that need to reduce vibrations.

Keywords Damping factor (tan δ) · Free vibration testing · Mechanical properties · Natural fiber · Polyester resin

1 Introduction

The rapid development in engineering has met the demand for sustainable, lightweight, high-performance materials that have strapped to focus on using natural fiber-reinforced composites. Natural or bio-composites are feasible substitutes for synthetic fiber composites in diverse applications. The composites exhibit notable advantages over their artificial counterparts, encompassing enhanced cost-effectiveness, diminished specific strength, and sustainability [1]. When amalgamated with polymer reinforcements, natural fibers have been extensively employed and shown to contribute significantly to various sectors. The essential properties of natural fibers, characterized by their tensile strength, compression resistance, impact resistance, and flexural strength, provide a fundamental foundation for cohesive resource

✉ Vimal Kumar Pathak, vimalkumar.pathak@jaipur.manipal.edu | [1]Department of Mechanical Engineering, Vels Institute of Science, Technology & Advanced Studies, Chennai, Tamil Nadu 600117, India. [2]School of Engineering, Vels Institute of Science, Technology & Advanced Studies, Chennai, Tamil Nadu 600117, India. [3]Department of Mechanical Engineering, Pragati Engineering College, Surampalem, Andhra Pradesh 533437, India. [4]Department of Mechanical Engineering, Annamacharya University, Rajampet, Andhra Pradesh 516126, India. [5]Department of Mechanical & Aerospace Engineering, Institute of Infrastructure, Technology, Research and Management, Ahmedabad, Gujarat 380026, India. [6]Department of Mechanical Engineering, Manipal University Jaipur, Jaipur, Rajasthan 303007, India.

ME-12

Experimental Analysis of Improved AODV Protocol with Automatic Route Guidance Method in Vehicular Communication

Publisher: IEEE

Cite This

E D Kanmani Ruby ; Bilal Al-Nassar ; G D Vignesh ; Nilesh Gedam ; Ganekanti Naresh ; N Nagaraju

8
Full
Text Views

Abstract
Authors
Figures
References
Keywords
Metrics
More Like This

Downl
PDF

Abstract:
The study analyses the Enhanced AODV Protocol and Automatic Route Guidance in vehicular communication, addressing challenges and advancements. It emphasizes the significa... **Show More**

Metadata

Contents

I. Introduction

Vehicular systems integrate V2V, V2I, and V2X communication methods, enhancing safety by enabling timely alert messages to authorities and surrounding vehicles during incidents [1]. A clusteroriented MAC protocol for VANETs, based on TDMA, addresses hidden terminal issues but suffers delays and lower throughput due to idle senders after unsuccessful transmissions during un[Sign in to Continue Reading]gnificant advancements in VANETs, challenges like security, medium access co[illegible]used attention, particularly in network

Need
Full-Text
access to IEEE *Xplore*
for your organization?
CONTACT IEEE TO SUBSCRIBE >

EEE-1

Enhancing Remote Sensing Image Quality with Advanced ADMM-Based Stripe Noise Removal

Publisher: IEEE Cite This PDF

J. HimaBindhu ; Shaik. Karimullah ; S. Fahimuddin ; A. Sushma ; K.Viswanath Reddy ; E. Vijay Simha **All Authors**

32
Full
Text Views

Abstract
Document Sections
I. Introduction
II. Literature Review
III. Methodology
IV. Simulated Results
V. Conclusion
Authors
Figures
References
Keywords
Metrics
More Like This

Abstract:
This study presents an efficient methodology for stripe noise removal in remote sensing images using the Alternating Direction Method of Multipliers (ADMM). The process begins with dataset preparation, where the image matrix is normalized and key characteristics, such as dimensions and peak intensity, are identified. Stripe noise is simulated by introducing vertical streaks with defined intensity ranges, creating a noisy image for testing. The ADMM framework is then employed with carefully initialized parameters, including regularization coefficients and iteration limits, to iteratively separate noise components and reconstruct the underlying image. The algorithm effectively suppresses noise while preserving essential image features, as validated by performance metrics such as Peak Signal-to-Noise Ratio (PSNR), Structural Similarity Index (SSIM), and mean absolute error (D). Visual comparisons of clean, noisy, and destriped images highlight the success of the noise removal process. With an execution time of 1.59 seconds, this robust approach enhances remote sensing image quality, enabling more reliable data analysis and supporting applications in environmental monitoring, urban planning, and land classification.

Published in: 2025 International Conference on Computer, Electrical & Communication Engineering (ICCECE)

Date of Conference: 07-08 February 2025

DOI: 10.1109/ICCECE61355.2025.10940410

Date Added to IEEE *Xplore*: 31 March 2025

Publisher: IEEE

ISBN Information:

Conference Location: Kolkata, India

ISSN Information:
Electronic ISSN: 2768-0576
Print on Demand(PoD) ISSN: 2768-0541

Sign in to Continue Reading

Authors
Figures
References
Keywords
Metrics

Back to Results

Dynamic AP-UE Association and Power Allocation in Sparse LSFD for Energy-Constrained Networks

Publisher: IEEE Cite This PDF

Shaik Karimullah ; Shaik Fahimuddin ; T N Ranganadham ; P. Hariobulesu ; R.Soma Sekhar ; C.Raviteja Reddy **All Authors**

14
Full
Text Views

Abstract

Document Sections

1. Introduction
2. Literature Review
3. Methodology
4. Simulation Results
5. Conclusion

Authors

Figures

References

Keywords

Metrics

More Like This

Abstract:
The rise of 5G and beyond has intensified the need for energy-efficient, high-capacity wireless networks, especially in IoT, smart cities, and dense urban settings. Sparse Large-Scale Fading Decoding (S-LSFD) addresses this challenge by dynamically associating User Equipment (UE) with a selective subset of Access Points (APs) offering the strongest channel gains. This selective association reduces interference, improves spectral efficiency, and minimizes energy consumption while maintaining Quality of Service (QoS).S-LSFD incorporates optimized power allocation to focus energy on high-quality AP connections, maximizing transmission efficiency. Its adaptability is governed by the control parameter λ, which balances reliability and energy savings by adjusting the number of APs each UE connects to. This flexibility makes S-LSFD ideal for energy-constrained scenarios like IoT ecosystems and densely populated areas.This study explores dynamic AP-UE association and power allocation mechanisms in S-LSFD using mathematical modeling and real-world scenarios. The proposed framework ensures scalability, energy efficiency, and high data rates, providing a sustainable solution for next-generation wireless networks.

Published in: 2025 International Conference on Computer, Electrical & Communication Engineering (ICCECE)

Date of Conference: 07-08 February 2025

DOI: 10.1109/ICCECE61355.2025.10941057

Date Added to IEEE *Xplore*: 31 March 2025

Publisher: IEEE

ISBN Information:

Conference Location: Kolkata, India

ISSN Information:
Electronic ISSN: 2768-0576
Print on Demand(PoD) ISSN: 2768-0541

Sign in to Continue Reading

Authors

Figures

References

Keywords

Metrics

Innovative Lung Cancer Diagnosis Using the AIReM-Net Hybrid Approach

Publisher: IEEE Cite This PDF

B. Umakanth ; S. Fahimuddin ; Shaik. Karimullah ; U. Tejaswini ; A. Sriteja ; S. Uday Kumar **All Authors**

18
Full
Text Views

Abstract
Document Sections
I. Introduction
II. Literature Review
III. Methodology
IV. Simulation Results
V. Conclusion
Show Full Outline
Authors
Figures
References
Keywords
Metrics
More Like This

Abstract:
As one of the primary causes of cancer-related death globally, lung cancer requires precise and effective diagnostic instruments for early identification and categorization. This paper presents AIReM-Net, a hybrid framework that combines Multi-Class Support Vector Machines (SVM) for classification, Reservoir Computing (RC) for dynamic pattern analysis, and AlexNet for feature extraction. The suggested methodology's clinical relevance and computational efficiency are highlighted by its 98.7% sensitivity, 100% specificity, and 98.8% accuracy. AIReMNet's detection module successfully overcomes the drawbacks of current diagnostic systems by preprocessing CT scans, segmenting lung nodules, and extracting essential information for precise cancer identification. Using both spatial and dynamic information for dependable classification, the combination of AlexNet, RC, and SVM guarantees accurate and robust results. With continued attempts to improve the system by incorporating a thorough classification module for real-time clinical applications, these developments offer a computationally effective and clinically appropriate approach for lung cancer diagnosis.

Published in: 2025 International Conference on Computer, Electrical & Communication Engineering (ICCECE)

Date of Conference: 07-08 February 2025

DOI: 10.1109/ICCECE61355.2025.10940133

Date Added to IEEE *Xplore*: 31 March 2025

Publisher: IEEE

ISBN Information:

Conference Location: Kolkata, India

ISSN Information:
Electronic ISSN: 2768-0576
Print on Demand(PoD) ISSN: 2768-0541

Sign in to Continue Reading

Authors
Figures
References
Keywords
Metrics

Optimization of Cluster Head Selection Using Bacterial Foraging Algorithm for Energy-Efficient Routing in Wireless Body Area Networks

Publisher: IEEE Cite This PDF

Shaik Karimullah ; S. Fahimuddin ; R. Madhan Mohan ; Muddanalali Gari Aparna ; Pabbathi Geethesh ; Bhumi Reddy Bhanu Teja All Authors

24
Full
Text Views

Abstract

Document Sections

1. Introduction
2. Literature Review
3. Methodology
4. Simulation Results:
5. Conclusion:

Authors

Figures

References

Keywords

Metrics

More Like This

Abstract:
Optimizing cluster head (CH) selection in Wireless Body Area Networks (WBANs) using the Bacterial Foraging Optimization (BFO) algorithm. The approach aims to enhance network performance by minimizing energy consumption, balancing node load, and ensuring reliable communication. The process begins with the initialization of bacteria, representing potential CH candidates, which are randomly distributed within the network. A multi-objective fitness function evaluates each bacterium based on residual energy, proximity to the sink, and data load distribution. The BFO algorithm employs chemotaxis for exploring the solution space, guided by both directed and random movements. The reproduction phase ensures that the most efficient bacteria propagate their traits to subsequent generations, while the elimination-dispersal phase prevents stagnation by introducing diversity in the solution space. The iterative process continues until a stopping criterion, such as convergence or maximum iterations, is met. The optimal CHs are selected based on the fitness evaluation, ensuring energy efficiency and balanced operation within the WBAN.

Published in: 2025 International Conference on Computer, Electrical & Communication Engineering (ICCECE)

Date of Conference: 07-08 February 2025

DOI: 10.1109/ICCECE61355.2025.10940516

Date Added to IEEE *Xplore*: 31 March 2025

Publisher: IEEE

▸ **ISBN Information:**

Conference Location: Kolkata, India

^ **ISSN Information:**
Electronic ISSN: 2768-0576
Print on Demand(PoD) ISSN: 2768-0541

Sign in to Continue Reading

Access to this document requires a subscriptio

IEEE offers both personal and institutional subscriptions. Whet you are an academic, a practitioner, or a student, IEEE offers a range of individual and institutional subscription options that meet your needs.

LEARN MORE Cl

Authors

Figures

References

SPRINGER NATURE Link

Log in

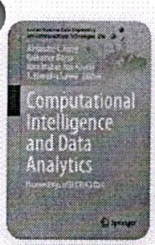
Menu | Search | Cart

Home > Computational Intelligence and Data Analytics > Conference paper

Deep Learning Based Approach for the Detection of Diabetic Retinopathy and Glaucoma

| Conference paper | First Online: 02 April 2025

| pp 231–244 | Cite this conference paper



Computational Intelligence and Data Analytics

(ICCIDA 2024)

M. Venkata Dasu ✉, K. Purushotham, M. Sravani, A. Pavan Kumar & T. Siva Kumar

Part of the book series: Lecture Notes on Data Engineering and Communications Technologies ((LNDECT,volume 236))

Included in the following conference series:
International Conference on Computing, Intelligence and Data Analytics

42 Accesses

Abstract

The diagnosis of diabetic retinopathy has historically depended on specialists analyzing digital retinal images, but these knowledgeable individuals are in short supply. Interest in using computer assistance for monitoring has increased because of this challenge. The

Cardiac Diagnosis System For Heart Diseases Classification Based on Deep Learning and Optimization Strategies Using ECG Signals

Publisher: IEEE Cite This PDF

C. Venkatesh ; L. Sivayamini ; M. Venkata Dasu ; D. Sreeranga Vyshnavi ; D. Yasaswini ; D. Sreenivasulu All Authors

34
Full
Text Views

Abstract
Document Sections
I. Introduction
II. Literature Review
Proposed Methodology
IV. Results
V. Conculsion
Authors
Figures
References
Keywords
Metrics
More Like This

Abstract:
Heart disease is among the leading causes of death worldwide. Significant factors include other cardiovascular disorders, such as aortic disease, coronary artery disease, and arrhythmia. The increase in death tolls has underlined the urgent necessity for precise and timely diagnosis to help initiate proper treatment. A mistake in diagnosis can result in very dire consequences. It is essential to be accurate when determining heart conditions. Lives are saved by early detection. Heart conditions are typically diagnosed using techniques that include electrocardiograms and computed tomography. Here, of the two methods, ECG is essentially the basis of diagnosing heart conditions. However, their interpretation in manual mode involves much time consumption. Traditional diagnosis through signal processing techniques includes feature extraction, selection, and classification that often lacks selection of proper features for better diagnosis accuracy. Deep Learning has been very promising in the last few years for tasks of prediction and classification. This work proposes CNNs to classify heart diseases. The system analyzes ECG signals, focusing on parameters like heart rate and RR intervals, to diagnose conditions such as arrhythmia, coronary artery disease, and aortic disease. The Osprey Optimization Algorithm will enhance the accuracy of the model developed in classifying heart disease by means of ECG. For testing and training purposes, it will evaluate performance with various metrics such as accuracy, sensitivity, specificity, MSE, and PSNR. This strategy is used in order to increase diagnostic accuracy and thus allow early detection while reducing death rates.

Published in: 2025 International Conference on Computer, Electrical & Communication Engineering (ICCECE)

Date of Conference: 07-08 February 2025

DOI: 10.1109/ICCECE61355.2025.10940447

Date Added to IEEE *Xplore*: 31 March 2025

Publisher: IEEE

ISBN Information:

Conference Location: Kolkata, India

ISSN Information:
Electronic ISSN: 2768-0576
Print on Demand(PoD) ISSN: 2768-0541

Sign in to Continue Reading

Authors
Figures

By using this website, you agree that EDP Sciences may store web audience measurement cookies and, on some pages, cookies from social networks. More information and setup Yes No

edp sciences Journals Books Conferences EDPS Account Web of Conferences

E3S Web of Conferences All issues Series Forthcoming About Search Menu

Open Access

Issue	E3S Web Conf. Volume 619, 2025 3rd International Conference on Sustainable Green Energy Technologies (ICSGET 2025)
Article Number	03018
Number of page(s)	5
Section	Smart Electronics for Sustainable Solutions
DOI	https://doi.org/10.1051/e3sconf/202561903018
Published online	12 March 2025

E3S Web of Conferences **619**, 03018 (2025)

IoT Based Delivery Robot with Theft Detection for Food and Goods Supply

K. Shankar[1], K. Raj Mohan[2], S. Gnanamurugan[3], S. Fayaz Begum[1], M. Maruthi Prasad[1] and Y. Pavan Kumar Reddy[1*]

[1] Annamacharya University, Rajampet, Andhra Pradesh, India

Table of Contents

Article contents

Abstract PDF (1.401 MB) References

Database links

NASA ADS Abstract Service

Metrics

Show article metrics

Services

Same authors

- Google Scholar
- EDP Sciences database

Recommend this article

Download citation

Alert me if this article is corrected

Alert me if this article is cited

Related Articles

Automated Soft Drinks Dispensing System Using Pneumatic Gripper Robot Arm

Tirumalaiah Gurram [a)], Gayathri Vallam, Chandrakanth Maddimani, Anusha Allapureddy, Shaik Abbas

Department of Electronics and Communication Engineering, Annamacharya Institute of Technology and Sciences, Rajampet-516126, India.

[a)]Corresponding Author: gayathri19113@gmail.com

Abstract - The incessant pursuit of automation and robotics in various facets of our daily lives has led to the inception of novel technologies aimed at enhancing efficiency and user experience. In this vein, this abstract introduces an innovative system – the Automated Soft Drink Dispensing System utilizing a Pneumatic Gripper Robot Arm. This system represents a paradigm shift in the conventional soft drink dispensing landscape, integrating advanced robotics and automation to streamline and elevate the beverage service industry. The Automated Soft Drink Dispensing System is designed to address the escalating demands for swifter and more precise service in the hospitality sector. The heart of this system lies in the utilization of a pneumatic gripper robot arm, a sophisticated mechanism capable of delicate and accurate manipulation. The robotic arm, equipped with pneumatic actuators, interfaces with an intelligent control system to facilitate seamless bottle handling and precise dispensing. Key components include a user-friendly interface allowing patrons to select their preferred soft drink, a bottle detection system employing sensors for accurate positioning, and a dispensing mechanism ensuring controlled and spill-free pouring. The integration of the pneumatic gripper arm introduces a tactile dimension to the user experience, underscoring the marriage of technology and convenience. This abstract explores the theoretical underpinnings of the proposed system, emphasizing its potential to redefine the traditional soft drink dispensing process. By amalgamating cutting-edge robotics with user-centric design, the Automated Soft Drink Dispensing System aims to deliver an unparalleled level of efficiency, accuracy, and engagement in the realm of beverage service. As we delve into the intricacies of this technological innovation, it becomes evident that this system has the capacity to set a new standard for automated dispensing solutions, providing a glimpse into the future of hospitality automation.

05 March 2025 03:53:44

INTRODUCTION

Soft drinks: Soft drinks are a type of non-alcoholic beverage that typically contains carbonation, sugar (natural or artificial), acid (edible or artificial), flavour (natural or artificial), and occasionally juice. The plant kingdom provides the raw materials for natural flavours, which include fruits, nuts, berries, roots, and herbs. Do not confuse soft drinks with caffeinated beverages, herbal teas, milk, chocolate or pure fruit or vegetable juices.

Dispensing System: The term "dispensing system" refers to the machinery that moves controlled substances from the storage tank system's inherent plumbing to another location, either inside or outside of the tank, via a flexible or rigid hose or pipe.

Background

The background for developing an automated soft drink dispensing system for event and entertainment gastronomy stems from the increasing demand for efficient and engaging beverage service in dynamic social settings. Traditional methods face challenges in meeting the diverse preferences of patrons during events. This project addresses these challenges by integrating advanced technologies such as sensors and pumps to enhance efficiency and user experience. The background also acknowledges the significance of maintaining high hygiene standards, crucial in the context of gastronomy, to ensure a safe and enjoyable environment for event attendees.

Objective

This project's goal is to create and put into place an automated soft drink dispenser designed especially for event and entertainment catering.

International Conference on Innovative Approaches in Engineering & Technology
AIP Conf. Proc. 3237, 060019-1–060019-11; https://doi.org/10.1063/5.0247088
Published under an exclusive license by AIP Publishing. 978-0-7354-5131-5/$30.00

SPRINGER NATURE Link

Log in

Menu | Search | Cart

Home > Cognitive Computing and Cyber Physical Systems > Conference paper

Exploring 6G Wireless Networks: Millimeter-Wave Revolution and Mixed-Carrier Communication for Enhanced Spectrum Efficiency

| Conference paper | First Online: 09 February 2025

| pp 425–437 | Cite this conference paper



Cognitive Computing and Cyber Physical Systems

(IC4S 2024)

Kalchatla Riyazuddin, Pulluru Vanitha, Gollapinni Sreenivasa Sarma, Ankala Surekha, Bathini Sunil Kumar & Alladu Vishnuvardhan Reddy

Part of the book series: Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering ((LNICST,volume 597))

Included in the following conference series: International Conference on Cognitive Computing and Cyber Physical Systems

4 Accesses

Abstract

The commercial launch of fifth-generation (5G) wireless cellular networks this year will pave the way for the widespread adoption of millimeter-wave (mm-wave) technology for spectrum access. To completely comprehend the real-world ramifications of offering several services across 6G networks at once, more investigation is required. 6G wireless technology offers improved capacity, latency, speed, and connection over 5G. It makes real-time communication, augmented reality, and the Internet of Things possible. Another objective is low latency, which ensures global coverage and environmental sustainability. In order to achieve high data throughput, 6G technology is experimenting with terahertz frequencies despite challenges such air attenuation and limited propagation ranges. In this work, we use mixed-carrier communication technology to investigate interference control and spectrum efficiency. Mixed-carrier systems are communication systems that transport data using numerous carriers at different frequencies. Numerous communication technologies frequently employ this technique to achieve a range of objectives, such as increased bandwidth efficiency, multiuser support, and improved performance under load. Data

SPRINGER NATURE Link

Log in

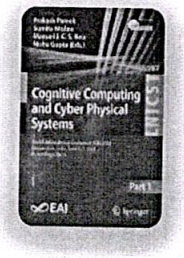
Menu | Search

Cart

Design and Modelling of Frequency Reconfigurable Antenna by Using Bow-Tie Geometry

| Conference paper | First Online: 09 February 2025

| pp 415–424 | Cite this conference paper



Cognitive Computing and Cyber Physical Systems

(IC4S 2024)

Kasigari Prasad ✉, Gandlapenta Rajeev, Mallipeddi Sai Vignesh, Kurmagiri Prathap & Eraganaboina Prakash

Part of the book series: Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering ((LNICST,volume 597))

Included in the following conference series: International Conference on Cognitive Computing and Cyber Physical Systems

7 Accesses

Comprehensive Methodology to the Detection and Classification of Emotion in Human Face using EMOTE-Net

Asif Hussain Shaik[1,*], Shaik Karimullah[2], Mudassir Khan[3], Fahimuddin Shaik[4]

[1]Technology Transfer Officer, Department of ECE, Middle East College, Muscat, Oman

[2]Department of ECE, Annamacharya Institute of Technology and Sciences, Rajampet, Andhra Pradesh, India

[3]Department of Computer Science at College of Computer Science, Applied College Tanumah, King Khalid University Abha, Saudi Arabia

[3]Department of ECE, Annamacharya Institute of Technology and Sciences, Rajampet, Andhra Pradesh, India

Emails: shussain@mec.edu.om; Munnu483@gmail.com; mudassirkhan12@gmail.com; fahimaits@gmail.com

Abstract

Presenting the network architecture EMOTE-Net is a method of enhancing the face emotion recognition and classification in video data for this work. The suggested model merges the use of DenseNet to extract features with the SVM (support vector machine) to categorize the data by specifying SVM here. This feature of EMOTE-Net is highly outstanding because SVM and DenseNet are combined and are thus capable of sophisticated classification and effective feature extraction. The first process to come in methodology is preprocessing of video data. Bounding Box detection is able to extract regions that are of interests (ROIs) and that Densenet is great at the feature representation with high dimensions. Henceforth, feed these features into a classifier from SVM for intelligent categorization. Evaluation has provided clear evidence regarding the efficiency of this model, which has obtained the accuracy of 0.9890, precision of 0.9900, sensitivity of 0.9877, specificity of 0.9972, and F1 score of 0.9886. The pertinence of EMOTE-Net to real life applications, such as video analytics, human-computer interaction, and surveillance, will be highlighted in the chapter through the references from the installation and evaluation processes. The work presents a viable approach for object detection and classification in changeful visual arenas.

Keywords: Computer Vision; Bounding Box Detection; Video Analysis; Region of Interest; DenseNet; SVM; Deep Learning

1. Introduction

In the fields of computer vision and video analysis, identifying an object exactly in a given scene and the assigning of a proper label become very difficult, especially when the scene has movement and complexity. Smart techniques associated with the use of more advanced impressive feature extraction and classification methods are vital for addressing these hurdles. We would achieve this goal by introducing EMOTE-Net, our DenseNet and Support Vector Machine (SVM) [1] combination. EMOTE-Net is the new solution to the problem. The proposed approach EMOTE-Net aims to build efficient video object detection and classification network by blending the features extraction algorithm of DenseNet with SVM, which is generally reliable in mechanizing the classification task.

This work presents a complete methodology that covers the video data analysis: from performing, preprocessing activities to object detection and image classification. First, video sources are taken from the database that consists of collection of photos. The tasks of preprocessing are implemented to improve frame quality in the video, and the Wiener filters are used to remove noise. Through this procedure, the information gets ready for the next analysis step. ROI

DOI: https://doi.org/10.54216/FPA.190102
Received: November 14, 2024 Revised: January 10, 2025 Accepted: February 05, 2025

USER
Username
Password
Remember me
Login

JOURNAL CONTENT
Search
Search Scope
All
Search
Browse
- By Issue
- By Author
- By Title

INFORMATION
- For Readers
- For Authors
- For Librarians

An efficient method for privacy protection in big data analytics using oppositional fruit fly algorithm

Ajmeera Kiran, Alwalid Bashier Gism Elseed Ahmed, Mudassir Khan, J. Chinna Babu, B. P. Santosh Kumar

Abstract

This work employs anonymization techniques to safeguard privacy. Data plays a vital role in corporate decision-making in the current information-centric landscape. Various sectors, like banking and healthcare, gather confidential information on a daily basis. This information is disseminated by multiple sources through numerous methods. Securing sensitive data is of paramount importance for any data mining application. This study safeguarded confidential information using an anonymization technique. Several machine learning methodologies have a deficiency in accuracy. The study seeks to generate superior and more precise results compared to alternative methodologies. For large datasets, numerous solutions exhibit increased time complexity and memory use. For huge datasets, numerous solutions require more time and memory. The enhanced fuzzy C-means (FCM) algorithm surpasses existing approaches in terms of both accuracy and information preservation. This study provides a comprehensive analysis of data anonymization utilizing the oppositional fruit fly approach, a technique that enhances privacy. The clustering method being presented utilizes an enhanced version of the FCM algorithm. The secrecy of the recommended oppositional fruit fly algorithm is effective. The comparison demonstrated that the proposed research enhanced both accuracy and privacy in comparison to two existing methods. The existing strategy outperforms data anonymization-based privacy preservation by 82.17%, while the suggested method surpasses it by 94.17%.

Keywords

Data privacy; Fruit fly algorithm; Fuzzy C-means; K-anonymization; Oppositional

Full Text:

PDF

DOI: http://doi.org/10.11591/ijeecs.v37.i1.pp670-679

Refbacks

- There are currently no refbacks.

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Indonesian Journal of Electrical Engineering and Computer Science (IJEECS)
p-ISSN: 2502-4752, e-ISSN: 2502-4760
This journal is published by the Institute of Advanced Engineering and Science (IAES).

IJEECS visitor statistics

Journal of Theoretical and Applied Information Technology
31st December 2024. Vol.102. No. 24
© Little Lion Scientific
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

DEEP LEARNING-BASED CONGESTION CONTROL IN VLSI FOR PLACEMENT AND ROUTING

SHAIK ASIF HUSSAIN[1]*, SHAIK KARIMULLAH[2], FAHIMUDDIN SHAIK[3], SYED JAVEED BASHA[4]

[1]Technology Transfer Officer & Asst. Professor, Head in charge of Centre for Research & Consultancy, Middle East College, Muscat, Sultanate of Oman.
[2]Associate Professor, Department of Electronics and Communication Engineering Annamacharya University, Rajampet, Andhra Pradesh, India.
[3] Associate Professor, Department of Electronics and Communication Engineering Annamacharya University, Rajampet, Andhra Pradesh, India.
[4]Design Verification Engineer, SmartSoc Solutions India Pvt.Ltd, Banglore, India.
E-mail:[1]shussain@mec.edu.om, [2]munnu483@gmail.com,
[3]fahimaits@gmail.com, [4]syed.javeed@smartsocs.com

ABSTRACT

This work presents the application of a recurrent neural network based on the deep learning technique to evaluate design constraints for routing and placement flow, with the assistance of existed floorplan approach, to estimate the value of congestion. Effective area utilization is essential in very large-scale integration (VLSI) circuit design, wherein congestion reduction is also associated with improving floorplan, placement, and routing. This improvement significantly helps a circuit's compact design and performance. Congestion is a fundamental key issue in VLI for estimating the density of area underlies routing among various computational blocks. We used the deep learning technique for the simulation of the standard benchmark circuit's planned area for better placement. Prior approaches estimated the values of congestion for standard architectures, whereas this work considered the floorplan and placement outputs of standard MCNCBM Circuit using the recurrent neural network-based algorithm (RNN-based algorithm), which yielded better results for placement and routing of VLSI circuits and simulated it to estimate the congestion for the circuit design. A recurrent neural network, an artificial neural network, uses sequential data or time series data. To handle problems that involve order or time, such as image captioning, language translation, and speech recognition, deep learning algorithms are frequently utilized. Learning occurs through the training data in RNNs, just as it does in feed-forward RNNs and convolutional neural networks (CNNs). The information "remembered" from earlier inputs can then be used to modify the current input and the output. This sets them apart from other systems. As they are currently understood, deep neural networks work under the assumption that inputs and outputs are independent of one another. On the other hand, the output of recurrent neural networks is, nevertheless, influenced by the information processed in the network before it. Although the occurrence of events in the future might help in determining the outcome of a particular sequence, unidirectional recurrent neural networks cannot consider these occurrences when generating predictions.

Keywords: *Congestion, Placement, RNN-based algorithm, VLSI, Partial blockage technique.*

1. INTRODUCTION

Identifying the shortest way of using the least expense from the beginning of the computational logic block to the end of the computational logic block in the chip area is one old but relevant issue in graph theory. Achieving the briefest path issue among computational logic blocks is significant in designing VLSI circuits, where the shortest path problem improves routing and placement. Traditional approaches and artificial intelligence algorithms make up most of the algorithms used to solve the shortest path problem. Dijkstra algorithm, A* algorithm, and the like, are among the most commonly used techniques. Numerous sensible deep learning methods have been developed since the turn of the 20th century as synthetic sensible technology improved. To solve the shortest path issue, several algorithms have been created, including the simulated annealing algorithm (SA), the particle swarm deep learning method (PSO), the genetic algorithm (GA), the Tabu search algorithm (TSA), and the ant colony algorithm. However, such conventional techniques cannot fulfill the operational performance requirements for

DANNET: deep attention neural network for efficient ear identification in biometrics

‹ PeerJ Computer Science View artic

DANNET: deep attention neural network for efficient ear identification in biometrics

Deepthy Mary Alex[1], Kalpana Chowdary M.[2], Hanan Abdullah Mengash[3], Venkata Dasu M.[4], Natalia Kryvinska[5], Chinna Babu J.[4], Ajmeera Kiran[2]

December 18, 2024
Read the peer review reports

Biometric identification, particularly ear biometrics, has gained prominence amidst the global prevalence of mask-wearing, exacerbated by the COVID-19 outbreak. This shift has highlighted the need for reliable biometric systems that can function effectively even when facial features are partially obscured. Despite numerous proposed convolutional neural network (CNN) based deep learning techniques for ear detection, achieving the expected efficiency and accuracy remains a challenge. In this manuscript, we propose a sophisticated method for ear biometric identification, named the encoder-decoder deep learning ensemble technique incorporating attention blocks. This innovative approach leverages the strengths of encoder-decoder architectures and attention mechanisms to enhance the precision and reliability of ear detection and segmentation. Specifically, our method employs an ensemble of two YSegNets, which significantly improves the performance over a single YSegNet. The use of an ensemble method is crucial in ear biometrics due to the variability and complexity of ear shapes and the potential for partial occlusions. By combining the outputs of two YSegNets, our approach can capture a wider range of features and reduce the risk of false positives and negatives, leading to more robust and accurate segmentation results. Experimental validation of the proposed method was conducted using a combination of data from the EarVN1.0, AMI, and Human Face datasets. The results demonstrate the effectiveness of our approach, achieving a segmentation framework accuracy of 98.93%. This high level of accuracy underscores the potential of our method for practical applications in biometric identification. The proposed innovative method demonstrates significant potential for individual recognition, particularly in scenarios involving large gatherings. When complemented by an effective surveillance system, our method can contribute to improved security and identification processes in public spaces. This research not only advances the field of ear biometrics but also provides a viable solution for biometric identification in the context of mask-wearing and other facial obstructions.

Introduction

The surge in interest insecure automated identity systems has led to a growth in resear within several domains such as intelligent systems and computer vision. Due to the consistency across time, ease of acquisition, and individuality, biometrics are used by t majority of human identification systems. The most widely used biometrics for huma identification include facial features, iris scans, fingerprints, palmprints, hand geomet voice, and signatures. While the voice of an individual is categorized as a blend physiological and biometric traits, researchers have developed numerous technologies differentiate diverse biometric traits. These applications span a range of purpose

DOWNLOAD THIS PDF FILE

International Journal of Electrical and Computer Engineering (IJECE)
Vol. 14, No. 6, December 2024, pp. 6786~6796
ISSN: 2088-8708, DOI: 10.11591/ijece.v14i6.pp6786-6796

Deep learning-based attention models for sarcasr text

Ganesh Chandrasekaran[1], Mandalapu Kalpana chowdary[2], Jyothi Cl Ajmeera Kiran[4], Kotthuru Anil Kumar[5], Seifedine Kadry[6]
[1]Department of Computer and Communication Engineering, Sri Eshwar College of Engineering
[2]Department of Computer Science and Engineering, MLR Institute of Technology, Hyde
[3]Department of Electronics and Communication Engineering, Annamacharya Institute of Technology an
[4]Department of Computer Science and Engineering, MLR Institute of Technology, Hyde
[5]Department of Electronics and Communication Engineering, Malla Reddy Engineering Colleg
[6]MEU Research Unit, Middle East University, Amman, Jordan
[7]Applied Science Research Center, Applied Science Private University, Amman, J

Article Info **ABSTRACT**

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Electrical and Computer Engineering (IJECE)
p-ISSN 2088-8708, e-ISSN 2722-2578

This journal is published by the Institute of Advanced Engineering and Science (IAES).

Internet of Things (IoT)-Based Smart Blood Bank Services: A Review

Publisher: IEEE Cite This PDF

J. Chinna Babu ; Mudassir Khan ; K. Nandini ; E. Reddysekhar ; G. Pavan Kumar ; B. Sathwika All Authors

43
Full
Text Views

Share

Abstract
Document Sections
I. Introduction
II. Literature Review:
III. Conclusion
Authors
Figures
References
Keywords
Metrics
More Like This

Abstract:
This review includes various methods or concepts that have been proposed by various authors for enhancing the offerings of blood banks. Smart blood bank services have been the subject of a great deal of research. Authors from several fields have provided their suggested models. An automated blood bank that uses SMS was created by Dr. G. F. Ali Ahmed, Pavitra H. V., utilizing an embedded technology. By employing mobile applications and IoT cloud services, Saravanan Subbiah created an integrated circuit. Vandana Khare IOT-based blood bank services were provided by T. Sravani. Based on the suggested system for blood bank services, Fizakhan. On blood bank services, S.S. Thorat made a proposal.

Published in: 2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT)

Date of Conference: 24-28 June 2024

DOI: 10.1109/ICCCNT61001.2024.10724178

Date Added to IEEE *Xplore*: 04 November 2024

Publisher: IEEE

ISBN Information:

Conference Location: Kamand, India

ISSN Information:

Sign in to Continue Reading

Authors
Figures
References
Keywords
Metrics

Exploring the Landscape of Diabetic Retinopathy Diagnosis: Insights from Extensive Literature Review and Preliminary Fundus Image Analysis

Publisher: IEEE Cite This PDF

Peddapullaiahgari Hariobulesu ; Fahimuddin Shaik **All Authors**

26
Full
Text Views

Abstract

Document Sections

I. Introduction

II. Review Based On Retinal Fundus

III. Review Based On OCT Images

IV. Discussion and Analysis

V. Results

Show Full Outline

Authors

Figures

References

Keywords

Metrics

More Like This

Abstract:
This study conducts a thorough analysis of one hundred important publications regarding the diagnosis of diabetic retinopathy (DR), with a particular emphasis on retinal fundus and OCT (Optical Coherence Tomography) images. In this work initial results on eye retinal fundus images are provided, including scaling, grayscale conversion, and image improvement as a part of pre-processing work. Area under Curve models, distributive deep learning strategies, high-accuracy models, and novel techniques such deep learning ensembles and segmentation algorithms were all included in the initial study. Our analysis condenses the conversation to 15 key researches and clarifies the techniques used, dataset variances, and implications for diagnosing diabetic retinopathy early. It highlights effective tactics while recognizing current constraints, highlighting how crucial early intervention is.

Published in: 2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT)

Date of Conference: 24-28 June 2024

DOI: 10.1109/ICCCNT61001.2024.10725492

Date Added to IEEE *Xplore*: 04 November 2024

Publisher: IEEE

ISBN Information:

Conference Location: Kamand, India

ISSN Information:

Sign in to Continue Reading

Authors

Figures

References

Keywords

Metrics

frontiers | Frontiers in Oncology

TYPE Original Research
PUBLISHED 07 October 2024
DOI 10.3389/fonc.2024.1435041

Check for updates

OPEN ACCESS

EDITED BY
Alice Chen,
Consultant, Potomac, MD, United States

REVIEWED BY
Yuanpin Zhou,
Zhejiang University, China
Ramana Kadiyala,
Chaitanya Bharathi Institute of Technology, India
Lucas Lins Lima,
University of São Paulo, Brazil

*CORRESPONDENCE
Bayan Alabduallah
bialabdullah@pnu.edu.sa
Mudassir Khan
mkmiyob@kku.edu.sa

RECEIVED 20 May 2024
ACCEPTED 16 September 2024
PUBLISHED 07 October 2024

CITATION
Karimullah S, Khan M, Shaik F, Alabduallah B and Almjally A (2024) An integrated method for detecting lung cancer via CT scanning via optimization, deep learning, and IoT data transmission.
Front. Oncol. 14:1435041.
doi: 10.3389/fonc.2024.1435041

COPYRIGHT
© 2024 Karimullah, Khan, Shaik, Alabduallah and Almjally. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

An integrated method for detecting lung cancer via CT scanning via optimization, deep learning, and IoT data transmission

Shaik Karimullah[1], Mudassir Khan[2*], Fahimuddin Shaik[1], Bayan Alabduallah[3*] and Abrar Almjally[4]

[1]Department of Electronics and Communications Engineering, Annamacharya Institute of Technology and Sciences (Autonomous), Rajampet, Andhra Pradesh, India, [2]Department of Computer Science, College of Science & Arts, Tanumah, King Khalid University, Abha, Saudi Arabia, [3]Department of Information Systems, College of Computer and Information Sciences, Princess Nourah Bint Abdulrahman University, Riyadh, Saudi Arabia, [4]Department of Information Technology, College of Computer and Information Sciences, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia

With its increasing global prevalence, lung cancer remains a critical health concern. Despite the advancement of screening programs, patient selection and risk stratification pose significant challenges. This study addresses the pressing need for early detection through a novel diagnostic approach that leverages innovative image processing techniques. The urgency of early lung cancer detection is emphasized by its alarming growth worldwide. While computed tomography (CT) surpasses traditional X-ray methods, a comprehensive diagnosis requires a combination of imaging techniques. This research introduces an advanced diagnostic tool implemented through image processing methodologies. The methodology commences with histogram equalization, a crucial step in artifact removal from CT images sourced from a medical database. Accurate lung CT image segmentation, which is vital for cancer diagnosis, follows. The Otsu thresholding method and optimization, employing Colliding Bodies Optimization (CBO), enhance the precision of the segmentation process. A local binary pattern (LBP) is deployed for feature extraction, enabling the identification of nodule sizes and precise locations. The resulting image underwent classification using the densely connected CNN (DenseNet) deep learning algorithm, which effectively distinguished between benign and malignant tumors. The proposed CBO+DenseNet CNN exhibits remarkable performance improvements over traditional methods. Notable enhancements in accuracy (98.17%), specificity (97.32%), precision (97.46%), and recall (97.89%) are observed, as evidenced by the results from the fractional randomized voting model (FRVM). These findings highlight the potential of the proposed model as an advanced diagnostic tool. Its improved metrics promise heightened accuracy in tumor classification and localization. The proposed model uniquely combines Colliding Bodies Optimization (CBO)

NO ACCESS

Influence of performance and emission of diesel engine with alumina nano material-based catalyst biodiesel using IoT

B. Venkatesh, Mudassir Khan, J. Chinna Babu, C.H. Nagaraju and R. Madhan Mohan

Published Online: October 2, 2024 • pp 338-351 • https://doi.org/10.1504/IJPEC.2024.141871

Abstract

In this study, the performance and emissions of Al_2O_3 alkaline cottonseed biodiesel-powered compression ignition engines were predicted. An experiment was conducted using different biodiesel blends made from cottonseed oil under various loading conditions. Biodiesel was produced using ethanol and Cao-mg/Al_2O_3 as catalysts through the transesterification process and blended with diesel to produce CBDN10, CBDN20, CBDN30, and CBDN40. The CBDN20 blends showed an evident reduction in fuel consumption by 8% and a 12% improvement in thermal efficiency at high static thrust. The use of these blends resulted in minimal CO, CO_2, and NO_x emissions from engines. These emissions were monitored by an IoT system and analysed with gas analysers, which revealed CBDN20's ability to reduce nitrogen oxide and hydrocarbon emissions compared to diesel. Additionally, CBDN20 demonstrated improved thermal efficiency and reduced brake-specific fuel consumption compared to the other blends.

Keywords

compression ignition engine, cotton seed oil, emission, IoT, performance

Previous Article Next Article

Detection and Classification of Brain Tumor from MRI And CT Images using Harmony Search Optimization and Deep Learning

Year : 2024 | Volume :11 | Issue : 03 | Page : –

Back

By Shaik Karimullah, Ali H.Wheeb, Fahimuddin Shaik,

1. Associate Professor Department of Electronics & Communication Engineering ,Annamacharya Sciences, Rajampet Andhra Pradesh India
2. Associate Professor Department of Computer Engineering, University of Baghdad Baghdad Iraq

STM JOURNALS

Manage Consent

To provide the best experiences, we use technologies like cookies to store and/or access device information. Consenting to these technologies will allow us to process data such as browsing behavior or unique IDs on this site. Not consenting or withdrawing consent, may adversely affect certain features and functions.

Accept

Opt-out preferences Privacy Statement

Investigation of Quantum Antenna Process for Advanced Wireless Communication systems by implementing Quantum Key Distribution algorithms

18 pages • Published: August 6, 2024

Prasad Kasigari, Gayathri Kamasani, Gopisriya Kavanoor, Baba Shareef Muntimadugu and Abubakar Shaik

Abstract

The forthcoming age of communication systems requires increased security, faster processing, and simpler encryption techniques. Quantum information and communication technology offer a revolutionary era featuring high-speed and inherently secure networks. With the looming prospect of quantum supremacy, traditional encryption systems face potential obsolescence in terms of security. In response to this challenge, quantum key distribution (QKD) emerges as an innovative solution for exchanging secret keys in a quantum based manner, addressing the limitations of conventional encryption methods. Within the proposed work, the focus extends to the implementation of a MIMO- QKD scheme tailored for terahertz (THz) frequency applications. The paper provides a comprehensive examination of both single-antenna QKD schemes and the performance of the MIMO QKD scheme. Simulation results underscore the indispensability of multiple antennas to mitigate the substantial free-space path loss encountered at THz frequencies.

Keyphrases: future antennas, quantum communication, quantum key distribution(qkd)

In: Rajakumar G (editor). Proceedings of 6th International Conference on Smart Systems and Inventive Technology, vol 19, pages 103-120.

Links: https://easychair.org/publications/paper/12G2

https://doi.org/10.29007/7cwl

Kalpa Publications in Computing
Volume 19, 2024, Pages 121–133
Proceedings of 6th International Conference on Smart Systems and Inventive Technology

Modelling and Investigation of Multiband Antenna for IRNSS and Satellite Communications

Dr. K. Prasad[1], V. Veera Swapna[2], M. Swetha[3], S. Mohan Krishna[4], C.Varakumar[5]
[1] Associate Professor
[2]Scholar.
[1,2,3,4,5,6]Department of Electronics and Communication Engineering
[1,2,3,4,5,6]Annamacharya Institute of Technology and Sciences, Rajampet, Andhra Pradesh, India.

kasigariprasad@gmail.com[1], vveeraswapna@gmail.com[2], matamswetha002@gmail.com[3], smkrishna998@gmail.com[4], varakumarchirala@gmail.com[5]

Abstract

Microstrip antennas have gained significant attention in modern communication systems due to their compact size, ease of integration, and versatility. At the outset this paper explores the antennas operational parameters, such as frequency of operation, bandwidth, and gain. Utilizing the HFSS software, the antennas geometry, including the patch dimensions and feed structure, is optimized to meet these requirements. Designing an antenna to attain specific requirements such as compact size, high-performance in operation tailored to specific frequency and bandwidth requirements is a critical job an antenna engineers. Electromagnetic simulations are conducted to analyze various antenna characteristics, including radiation pattern, impedance matching and gain. Through iterative designs, simulation and optimization processes. The proposed antenna's performance is being assessed across multiple antenna parameters, encompassing Return Loss, Bandwidth, Gain, and S-Parameters. Respective antenna design modifications are implemented to fine-tune the antennas performance. Using HFSS software, the paper increases understanding of microstrip patch antenna design. It also offers practical guidance for creating high-performance antennas suitable for diverse applications like wireless communication, satellite communication, and radar systems.

Keywords: Microstrip antennas, HFSS software, Antenna design, Operational parameters, Frequency of operation, Bandwidth, Gain, Electromagnetic simulations, Radiation pat-tern, Antenna performance.

RESEARCH ARTICLE | JULY 08 2024

The channel estimation for MIMO-OFDM systems using discrete wavelet transform

B. Praveen Kumar ✉; Gopisetty Ramesh; K. Naga Sankar Reddy; P. Hari Obulesu

+ Author & Article Information

AIP Conf. Proc. 3028, 020003 (2024)

https://doi.org/10.1063/5.0215298

Generally compared to the FDM system with OFDM, it can provide the orthogonality it helps to reduce the inter carrier interference and inter symbol interference in a communication channel. However, we can use the various types of channel estimation techniques like LSE, MMSE, DFT and DCT. But by using this type of techniques we cannot find the accurate error signal in a channel and it very slow process. To overcome this problem here we propose the DWT based channel estimation technique helps to increase the performance to find error signal at channel accurately. The DWT based OFDM System can obtain the BER and SNR Curves are improved to get the good signal quality at receiver end.

Topics

Discrete wavelet transform

REFERENCES

1. G.L. Tuber, J.R. Barry, S.W. McLaughlin, Ye Li, M.A. Ingram and T.G. Pratt, "Broadband MIMO-OFDM wireless communications," *Proceedings of the IEEE*, vol 92, No. 2, pp. 271–294, February. 2004.
https://doi.org/10.1109/JPROC.2003.821912
Google Scholar Crossref

2. Jan-Jaap van de Beek, O. Edfors, and M. Sandell, "On channel estimation in OFDM systems," *Presented at in*

Advanced Brain Tumor Diagnosis using Haralick Texture Features and Multiclass SVM in MRI Imaging

Publisher: IEEE

Cite This PDF

Shaik Karimullah ; Mohammed Mahaboob Basha ; Fahimuddin Shaik ; Srinivasulu Gundala ; Anca Stan ; Ovidiu Petru Stan All Authors

6 Cites in Papers

76 Full Text Views

Abstract

Document Sections

I. Introduction

Literature Review

III. Methodology

IV. Experimental Results and Performance Evaluation

V. Conclusion

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Abstract:
This study employs contemporary computer techniques and magnetic resonance imaging (MRI) to tackle the critical issue of brain tumor classification. The proposed technique involves obtaining databases, preprocessing the data, extracting features, applying machine learning for classification, and conducting a thorough performance evaluation. The method enhances the visibility of tumors and enhances the characteristics of images by acquiring a diverse collection of MRI images and applying a series of preprocessing operations, including Otsu Binarization, Gray Level Thresholding, Morphological Operations, and Principal Component Analysis (PCA). Subsequently, the Haralick texture characteristics are extracted to depict the textural patterns observed in the pictures. The concept is based on utilizing a multiclass Support Vector Machine (SVM) to achieve accurate tumor classification. Our proposed technique demonstrated efficacy in accurately classifying brain tumors, as evidenced by an impressive accuracy rate of 99.764% and near-perfect ROC curve performance, with area under the curve (AUC) values close to 1. The findings emphasize the potential practicality of the technique and contribute to the advancement of computational methods and medical imaging in the field of brain tumor detection.

Published in: 2024 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR)

Date of Conference: 16-18 May 2024

DOI: 10.1109/AQTR61889.2024.10554101

Date Added to IEEE *Xplore*: 14 June 2024

Publisher: IEEE

ISBN Information:

Conference Location: Cluj-Napoca, Romania

Electronic ISSN: 1844-7872

Sign in to Continue Reading

Authors

Figures

References

Citations

Keywords

ECE-25

Journal of Harbin Engineering University
ISSN: 1006-7043

Vol 45 No. 6
June 2024

Ai-Driven Optimization of Iot Antenna Design for Enhancing Efficiency, Adaptability, and Performance

Prasad K.[1]
Associate Professor, Department of ECE
Annamacharya Institute of Technology & Sciences, Rajampet

Abstract

The Internet of Things (IoT) relies heavily on wireless communication principles, necessitating various wireless network components for its design and deployment, including antennas, antenna support systems, and edge computing facilities, gateways, and data centers. Given the small size and resource constraints of IoT nodes and sensors, these wireless components must be tailored to their specific applications and required characteristics. This research explores the integration of artificial intelligence (AI) techniques in the design and optimization of antennas for IoT applications. Leveraging machine learning algorithms, the proposed intelligent antenna system enhances performance metrics such as gain, efficiency, and radiation patterns. A comprehensive theoretical framework is presented and validated through simulation and experimental results. The study demonstrates significant improvements in antenna performance, adaptability to dynamic environments, and the potential for real-time reconfiguration. Additionally, it addresses the challenges associated with the architectures used for both large-scale and small-scale IoT deployments. These findings underscore the promising role of AI in advancing IoT antenna technologies, leading to more efficient and adaptable IoT networks.

Keywords: Antenna design, IoT, Artificial intelligence, Machine learning, Reconfigurable antennas, Smart antennas

Introduction

The rapid expansion of the Internet of Things (IoT) has necessitated advancements in antenna technology to meet the increasing demands for connectivity, miniaturization, and power efficiency. Traditional antenna design methods, while effective, often fall short in dynamic and complex IoT environments. This research aims to bridge this gap by integrating artificial intelligence (AI) techniques into the antenna design process, enabling smarter and more adaptable antenna systems. Antennas play a crucial role in IoT systems by enabling wireless communication between IoT devices and networks. They transmit and receive electromagnetic waves, facilitating data exchange. Given the compact and resource-constrained nature of IoT devices, antennas must be designed to be efficient, compact, and capable of operating within the specific frequency bands required by various IoT applications.[1]

The Internet of Things (IoT) has rapidly evolved as a transformative technology, interconnecting various devices and systems to facilitate seamless data exchange and automation. Predominantly wireless in nature, IoT leverages fundamental principles of wireless communication and networking, necessitating an array of wireless network components such as antennas, antenna support systems, edge computing facilities, gateways, and data centers. These components are crucial for the efficient design and deployment of IoT networks. IoT nodes and sensors are often characterized by their small size and limited resources, which imposes specific demands on the design of wireless components. Antennas, a core component in IoT devices, must be tailored to meet the unique requirements of various IoT applications, ensuring optimal performance within constrained environments. This necessitates a careful balance between miniaturization, efficiency, and functionality. Recent advancements in artificial intelligence (AI) present a promising avenue for enhancing antenna design and optimization. AI techniques, particularly machine learning algorithms, offer significant potential to improve performance metrics such as gain, efficiency, and radiation patterns. By incorporating AI, antennas can be intelligently designed to adapt to dynamic environments, providing real-time reconfiguration

DOI: 10.21917/ijct.2024.0493

PRIVACY-PRESERVING TECHNIQUES IN BIG DATA AND INFORMATION SECURITY

S. Murugesan[1], S. Ashok Kumar[2], K. Tamilselvi[3] and T. Thiyagarajan[4]

[1]*Department of Information Technology, Tagore Engineering College, India*
[2]*Department of Artificial Intelligence and Data Science, Annamacharya University, India*
[3]*Department of Computer and Science Engineering, P. A. College of Engineering and Technology, India*
[4]*Department of Computer Applications, Nehru Institute of Information Technology and Management, India*

Abstract

In the era of big data, ensuring privacy while processing vast amounts of sensitive information poses a significant challenge. Traditional encryption methods often fall short in maintaining both privacy and data utility during computation. This paper introduces Two-Trapdoor Homomorphic Encryption (TTHE), a novel approach designed to enhance privacy-preserving capabilities in big data and information security. TTHE combines the strengths of trapdoor functions with homomorphic encryption to enable secure data processing without compromising privacy. With the exponential growth of data, safeguarding sensitive information has become a critical concern. Existing encryption schemes often struggle to balance between privacy preservation and computational efficiency. Homomorphic encryption offers a potential solution by allowing computations on encrypted data, but current methods are limited by performance and scalability issues. The key challenge addressed is the inefficiency and performance bottlenecks in current homomorphic encryption schemes, which hinder their practical application in big data environments. Traditional methods often face limitations in processing large datasets efficiently while maintaining robust security. TTHE is proposed as an enhancement over traditional homomorphic encryption. It integrates two distinct trapdoor functions to provide a dual-layer security approach, enabling efficient and scalable computation on encrypted data. The method involves a novel encryption scheme where operations on ciphertexts are performed without decryption, preserving data privacy throughout the process. Extensive experiments demonstrate that TTHE significantly improves both computational efficiency and security. The proposed method achieved a processing speed increase of 45% compared to conventional homomorphic encryption schemes. Additionally, TTHE maintained a privacy level with a security strength of 128-bit encryption, providing robust protection against potential attacks.

Keywords:

Privacy-Preserving, Homomorphic Encryption, Big Data, Trapdoor Functions, Information Security

1. INTRODUCTION

In today's data-driven world, big data has become a cornerstone of numerous industries, enabling enhanced decision-making and personalized services. However, with the vast amounts of sensitive information being generated and processed, ensuring privacy and security remains a pressing concern. Traditional encryption methods often struggle to balance the need for data privacy with the ability to perform meaningful computations on encrypted data [1]. This paper presents Two-Trapdoor Homomorphic Encryption (TTHE), an innovative approach designed to address these challenges and improve privacy-preserving capabilities in big data environments.

The rise of big data has transformed various sectors, from healthcare to finance, by providing valuable insights through advanced data analytics. Despite the benefits, the handling of sensitive information poses significant privacy risks. Traditional encryption methods, while effective in securing data at rest, often impede the ability to perform computations on encrypted data. Homomorphic encryption has emerged as a promising solution, allowing computations on ciphertexts without requiring decryption [2]. However, the practical application of homomorphic encryption in large-scale data environments is limited by performance issues and computational inefficiencies [3].

The primary challenges in deploying homomorphic encryption for big data applications include computational overhead, scalability, and performance bottlenecks. Current homomorphic encryption schemes often suffer from high computational costs and limited efficiency, which can be a barrier to their adoption in real-world scenarios [4]. Additionally, maintaining robust security while ensuring that encrypted data remains usable for complex computations is a significant challenge [5]. Existing methods also face difficulties in scaling to handle the vast volumes of data generated in modern applications [6]. As a result, there is a pressing need for more efficient and scalable privacy-preserving techniques [7].

The central problem addressed by this research is the inefficiency of current homomorphic encryption schemes in processing large datasets while maintaining robust security. Traditional approaches often exhibit performance bottlenecks, limiting their practical utility in big data environments. This inefficiency undermines the potential benefits of homomorphic encryption, making it challenging to achieve a balance between data privacy and computational effectiveness [8]. Additionally, existing methods may not offer sufficient scalability to handle the increasing volume and complexity of data [9].

This paper aims to develop and evaluate Two-Trapdoor Homomorphic Encryption (TTHE), a novel approach that addresses the limitations of existing homomorphic encryption schemes. The objectives are to enhance the efficiency of homomorphic encryption, improve scalability for large datasets, and maintain robust security throughout the computation process. By using two distinct trapdoor functions into the encryption scheme, TTHE seeks to provide a dual-layer security approach that enables more efficient and scalable processing of encrypted data.

The novelty of TTHE lies in its combination of two trapdoor functions, which enhances both security and computational efficiency. Unlike traditional homomorphic encryption schemes that rely on a single layer of security, TTHE introduces a dual-

DOI: 10.21917/ijme.2024.0311

ADVANCING ANALOG DESIGN: STRATEGIES AND TECHNIQUES FOR EMERGING TECHNOLOGY PLATFORMS

M. Anusuya[1], Swarna Surekha[2], D. Radhamani[3], R. Nithya[4], S. Jabeen Begum[5], Eswararao Boddepalli Bradley[6]

[1]*Department of Physics, Indra Ganesan College of Engineering, India*
[2]*Department of Artificial Intelligence and Machine Learning, Annamacharya Institute of Technology and Sciences, India*
[3]*Department of Physics, Karpagam College of Engineering, India*
[4]*School of Computing Science, KPR College of Arts Science and Research, India*
[5]*Department of Computer Science and Engineering, Velalar College of Engineering and Technology, India*
[6]*Virgina Tech, United States of America*

Abstract

Analog computation leverages Ordinary Differential Equations (ODEs) and Partial Differential Equations (PDEs) for efficient vector-matrix multiplications (VMMs), offering significant energy savings compared to digital computations. The development of analog and mixed-signal benchmarks facilitates the evaluation and synthesis of analog designs, essential for analog-digital co-design exploration and automated architectural design space exploration. Current analog and mixed-signal benchmark suites lack comprehensive and representative examples across various domains and complexities. This limits the ability to effectively assess and utilize analog synthesis tools and circuits. This work introduces a suite of analog benchmarks spanning acoustic, vision, communications, and analog filter systems. These benchmarks feature reconfigurable and customizable parameters, designed to integrate with existing analog circuits and tools. The feasibility of these benchmarks is demonstrated through their synthesis into reconfigurable FPAAs and integrated circuits (ICs). The proposed benchmarks were successfully synthesized into analog circuits, demonstrating their practical applicability. Analog VMMs proved to be approximately 1,000 times more energy-efficient than their digital counterparts. These benchmarks enable thorough evaluation and comparison of analog designs, supporting advancements in analog computation and system design.

Keywords:

Analog Computation, Benchmarks, Mixed-Signal Design, Vector-Matrix Multiplication, Reconfigurable Circuits

1. INTRODUCTION

Analog computation leverages physical phenomena, such as electrical currents and voltages, to perform calculations directly using continuous-time (CT) systems. This approach can efficiently handle vector-matrix multiplications (VMMs) through the inherent properties of analog circuits, which are particularly adept at long summations and integration processes. Unlike digital systems, which rely on discrete logic operations, analog computation utilizes Ordinary Differential Equations (ODEs) and Partial Differential Equations (PDEs) to model and solve complex problems [1]. Analog systems have demonstrated the potential for up to 1,000 times greater energy efficiency in VMM computations compared to digital systems. The integration of capacitors and currents within analog circuits aligns well with the physical laws governing these processes, providing an advantage in continuous and high-speed computations [2].

Despite the advantages of analog computation, the field faces several challenges. The complexity of analog circuits and their behavior under varying conditions makes it difficult to standardize and evaluate their performance across different applications. Additionally, the lack of a comprehensive benchmark suite for analog and mixed-signal designs hampers the development and assessment of new analog synthesis tools and techniques. The existing benchmarks are often limited in scope, focusing on specific applications or circuit types, which does not provide a holistic view of analog design capabilities. Furthermore, the synthesis of analog circuits from high-level benchmarks remains a challenge, especially when aiming for reconfigurability and customizability to suit diverse application needs [3].

The core problem addressed by this work is the absence of a representative and comprehensive benchmark suite for analog and mixed-signal circuits. Current benchmarks do not adequately cover the full spectrum of analog computation applications, which impedes the evaluation and advancement of analog synthesis tools. The lack of standard benchmarks limits the ability to explore and optimize analog-digital co-designs and inhibits the automated design space exploration (DSE) needed to identify the best configurable architectures for various applications.

The primary objectives of this work are:

- To define a rich set of analog benchmarks that encompass a range of complexity and application domains, including acoustic, vision, communications, and analog filter systems.
- To develop concepts and methodologies for integrating these benchmarks with contemporary analog and mixed-signal design tools.
- To demonstrate the feasibility of synthesizing these benchmarks into existing analog circuits, such as reconfigurable FPAAs (Field Programmable Analog Arrays) and integrated circuits (ICs).
- To enable automated architectural design space exploration (DSE) by providing a comprehensive suite of benchmarks that supports the evaluation and optimization of analog designs.

This work introduces several novel aspects to the field of analog computation:

- The proposed suite is the first to offer a rich and representative set of analog benchmarks across multiple domains and complexity levels. This suite includes benchmarks for acoustic, vision, communications, and analog filter systems, addressing a significant gap in current benchmarking practices.

https://doi.org/10.48047/AFJBS.6.12.2024.5284-5297

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

Data-Driven Decision-Making in Healthcare Management: The Role of Computer Science

SWARNA SUREKHA,
ASSISTANT PROFESSOR,
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
ANNAMACHARYA UNIVERSITY,RAJAMPET ANNAMAYYA DISTRICT ANDHRA PRADESH
swarnas.623@gmail.com

Name: G.Nixon Samuel Vijayakumar
Designation: Professor
Department: Physics
Institute: R.M.K.Engineering college,
RSM Nagar, Kavaraipettai (P.O)
601206
District: Thiruvallur
City :Thiruvallur
State: Tamilnadu
Email ID: gns.sh@rmkec.ac.in

Name: Prof Melanie Lourens
Designation: Deputy Dean
Department: Management Sciences
Institute: Durban University of Technology
District: KwaZulu-Natal
City: Durban
State: South Africa
Email: Melaniel@dut.ac.za

Name: Sanjose A Thomas
Designation: Assistant Professor & Head
Department: Sociology
Institute: Sacred Heart College(Autonomous)
Thevara
District: Ernakulam

Bulletin of Pure and Applied Sciences
Zoology (Animal Science), Vol.43B, No.2s,
July-December 2024: P. 27-42

Print version ISSN 0970-0765
Online version ISSN 2320-3188

Original Research Article

Content Available online at: www.bpasjournals.com

MATHEMATICAL MODELING OF CHEMICAL PROCESSES IN ANIMAL PHYSIOLOGY: A COMPUTATIONAL APPROACH

Swarna Surekha
Assistant professor
Department of Artificial intelligence and machine learning
Annamacharya Institute of Technology and Sciences Autonomous Rajampet Annamayya district Andhra Pradesh
samramana44@gmail.com

Dr.Govind Hanmantrao Balde,
Head & Associate Professor,
Research and P.G.Deptt Of Zoology, NTVS'S G.T.Patil Arts, Commerce and Science College, Nandurbar - 425 412 (M.S.) India
govindbalde@gmail.com

P Sundarayya
Department of Mathematics
Gitam school of science
GITAM deemed to be University
Visakhapatnam
India. 530045 mail. sperumal@gitam.edu

M. Bala Prabhakar
Associate Professor
Department of Mathematics
Aditya University,
Surampalem -533 437,
India.
E-Mail: prabhakar_mb@yahoo.co.in

Dr. Pooja Swaroop Saxena
Associate Professor
Department: Mathematics
Institute: DIT University
District: Dehradun
City:Dehradun
State: Uttarakhand
Email: poojassaxena22@gmail.com

AIML-4

SPRINGER NATURE Link

Log in

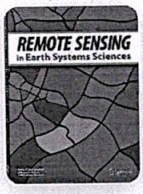
Menu Search Cart

Home Remote Sensing in Earth Systems Sciences Article

GeoAgriGuard: AI-Driven Pest and Disease Management with Remote Sensing for Global Food Security

RESEARCH Published: 20 January 2025

Volume 8, pages 409–422, (2025) Cite this article



Remote Sensing in Earth Systems Sciences

Aims and scope

Submit manuscript

K. Sharada, Shailee Lohmor Choudhary, T. Harikrishna, Rinku Sharma Dixit, Sanjay Kumar Suman, M. Ayyappa Chakravarthi & L. Bhagyalakshmi

329 Accesses 15 Citations Explore all metrics →

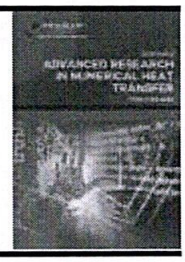
Abstract

Agricultural productivity is increasingly threatened by the growing frequency and severity of pest and disease outbreaks, exacerbated by climate change and evolving environmental conditions. The GeoAgriGuard AI-Driven Pest and Disease Management System integrates remote sensing technologies with advanced AI models to address pest and disease outbreaks in agriculture. Utilizing multi-spectral and hyper-spectral satellite and drone imagery, the

SEMARAK ILMU PUBLISHING

Journal of Advanced Research in Numerical Heat Transfer

Journal homepage:
https://semarakilmu.com.my/journals/index.php/arnht/index
ISSN: 2735-0142



MHD Flow and Heat Transfer of Carreau Fluid with Radiation and Heat Source Effect

Venkateswara Raju Konduru[1], Ravi Babu Narahari[2], Chandra Reddy Poli[3,*], Veera Sankar Battala[4], Mohana Ramana Ravuri[2], Sridevi Dandu[5], Madhumohana Raju Addepalli Balaraju[6]

[1] Department of Mathematics, Sri Venkateswara College of Engineering (Autonomous), Karakambadi Road, Tirupati-517507, Andhra Pradesh, India
[2] Department of Mathematics, Narasaraopeta Engineering College (Autonomous), Kotappakonda Road, Narasaraopet-522601, Andhra Prades, India
[3] Department of Mathematics, Annamacharya University, Rajampet-517520, Andhra Pradesh, India
[4] Department of Humanities and Sciences, KSRM College of Engineering (Autonomous), Pullivendula Road, Kadapa-516005, Andhra Pradesh, India
[5] Department of Engineering Mathematics & Humanities, S.R.K.R. Engineering College, Bhimavaram-534202, Andhra Pradesh, India Pradesh, India
[6] Department of Mathematics, New Horizon College of Engineering, Bangalore-560103, Karnataka, India

ARTICLE INFO

Article history:
Received 4 August 2024
Received in revised form 10 September 2024
Accepted 9 October 2024
Available online 30 November 2024

Keywords:
Carreau Nanofluid;
Magnetohydrodynamic; Numerical method

ABSTRACT

This article investigates the effects of radiation and heat transfer in the context of Magnetohydrodynamic (MHD) flow of a Carreau liquid over a non-linearly shrinking sheet, using a numerical approach. To tackle the problem, the governing partial differential equations (PDEs) are appropriately transformed into a set of ordinary differential equations (ODEs). These resulting non-linear ODEs are then solved numerically using the fourth-order Runge-Kutta (R-K) method, accompanied by the shooting technique to ensure accuracy and convergence. The study reveals various significant physical characteristics such as the Prandtl number, Weissenberg number, radiation parameter, heat source, and magnetic parameter, all of which play critical roles in influencing the flow and heat transfer behavior. These characteristics are analyzed and presented graphically, providing a clear understanding of how different physical parameters affect the MHD Carreau liquid flow. The findings offer valuable insights into the dynamics of such systems under varying physical conditions, contributing to the broader understanding of heat and mass transfer in complex fluids.

1. Introduction

The liquid that gratifies Newton's viscosity law is a Newtonian liquid. All the drinks are not pursuing the stress-strain connection. Those liquids not heeding Newton ordinance of consistency are comprehended as non-Newtonian liquids. The relationship between shear strain and shear rate is nonlinear for non-Newtonian juice. Because of numerous uses in engineering manufacturing and biology, the deconstruction of non-Newtonian liquids has evolved significantly in current years.

* *Corresponding author.*
E-mail address: chandramsc01@gmail.com (Chandra Reddy Poli)

https://doi.org/10.37934/arnht.26.1.142155

Multiscale and Multidisciplinary Modeling, Experiments and Design (2025) 8:291
https://doi.org/10.1007/s41939-025-00877-1

ORIGINAL PAPER

Neural network-driven analysis of MHD boundary layer flow and heat transfer in Sisko nanofluids

K. Jyothi[1] · Bhajantri Venkateswarlu[2] · P. Chandra Reddy[3] · Raghunath Kodi[4] · Damodara Reddy Annapureddy[5]

Received: 16 January 2025 / Accepted: 20 April 2025
© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2025

Abstract

This research focuses on the detailed investigation of surface layer flow and heat transfer in nanofluids, specifically those composed of Al_2O_3-EG and TiO_2-EG. By utilizing neural networks, the study aims to enhance the understanding of magnetohydrodynamic (MHD) effects in nanofluid systems. Key factors such as slip boundary conditions, variable viscosity, and thermal conductivity are considered, and the phenomena are analyzed using similarity transformations. The effects of important parameters on velocity, temperature, and concentration profiles are illustrated through visual representations. A thorough examination of the Nusselt numbers, skin-friction coefficients, and Sherwood numbers shows a decrease in these values as the material fraction increases. MATLAB simulations, integrated with neural network algorithms, ensure accurate computational analysis, with results demonstrating high precision and reliability. The findings are further validated using various analytical techniques, providing a comprehensive evaluation of the model. This study contributes to the existing literature on the impact of thermal radiation on nanofluids and enhances our understanding of how advanced materials behave in MHD systems. Moreover, the research highlights the potential of Artificial Intelligence (AI) and machine learning techniques, particularly neural networks, as powerful tools for future investigations in nanofluid dynamics and heat transfer. The findings have significant industrial applications, particularly in the development of advanced cooling systems, such as those used in electronics, automotive, and energy sectors, where efficient heat management is crucial. The insights gained from this study can also benefit applications in geothermal energy systems, microelectronics, and other fields involving heat and mass transfer in MHD-based processes.

Keywords Magneto-hydrodynamics · Nanoliquids · Boundary layer flow · Neural networks

List of symbols

x,y,z	Spatial coordinates, m
u,v,w	Velocity components along x,y,zx, y, zx,y,z axes, m/s
T	Temperature, K (Kelvin)
C	Concentration of nanoparticles, kg/m^3
ϕ	Volume fraction of nanoparticles, dimensionless
ρ	Density, kg/m^3
μ	Dynamic viscosity, Pa·s ($kg \cdot m^{-1} \cdot s^{-1}$)
ν	Kinematic viscosity, m^2/s

✉ Raghunath Kodi
kraghunath25@gmail.com

K. Jyothi
asha.jyothi414@gmail.com

Bhajantri Venkateswarlu
myvenkat18@gmail.com

P. Chandra Reddy
chandramsc01@gmail.com

Damodara Reddy Annapureddy
damodar.mech@jntua.ac.in

1 Department of Mathematics, G Pulla Reddy College of Engineering College (Autonomous), Kurnool, Andhra Pradesh 518002, India

2 Department of Mathematics, Vikrama Simhapuri University, Nellore, Andhra Pradesh, India

3 Department of Mathematics, Annamacharya University, Rajampet, Andhra Pradesh 516126, India

4 Department of Humanities and Sciences, St. Johns College of Engineering Technology (Autonomous), Yemmiganur, Andhra Pradesh 518360, India

5 Mechanical Engineering Department, JNTUACE, Constitute College of Jawaharlal Nehru Technological University Ananthapuramu, Pulivendula 516390, Andhra Pradesh, India

Published online: 07 May 2025

atmosphere

MDPI

Article

Investigations on Stubble-Burning Aerosols over a Rural Location Using Ground-Based, Model, and Spaceborne Data

Katta Vijayakumar [1], Panuganti China Sattilingam Devara [2,*] and Saurabh Yadav [2]

[1] Department of Humanities and Sciences, Annamacharya University (AU), Rajampet 516126, India; kvkaits@gmail.com

[2] Amity Centre for Ocean-Atmospheric Science and Technology (ACOAST), Environmental Science and Health (ACESH), Air Pollution Control (ACAPC), Amity University Haryana (AUH), Gurugram 122413, India; aamityyadav2035@gmail.com

* Correspondence: pcsdevara@ggn.amity.edu

Abstract: Agriculture crop residue burning has become a major environmental problem facing the Indo-Gangetic plain, as well as contributing to global warming. This paper reports the results of a comprehensive study, examining the variations in aerosol optical, microphysical, and radiative properties that occur during biomass-burning events at Amity University Haryana (AUH), at a rural station in Gurugram (Latitude: 28.31° N, Longitude: 76.90° E, 285 m AMSL), employing ground-based observations of AERONET and Aethalometer, as well as satellite and model simulations during 7–16 November 2021. The smoke emissions during the burning events enhanced the aerosol optical depth (AOD) and increased the Angstrom exponent (AE), suggesting the dominance of fine-mode aerosols. A smoke event that affected the study region on 11 November 2021 is simulated using the regional NAAPS model to assess the role of smoke in regional aerosol loading that caused an atmospheric forcing of 230.4 W/m^2. The higher values of BC (black carbon) and BB (biomass burning), and lower values of AAE (absorption Angstrom exponent) are also observed during the peak intensity of the smoke-event period. A notable layer of smoke has been observed, extending from the surface up to an altitude of approximately 3 km. In addition, the observations gathered from CALIPSO regarding the vertical profiles of aerosols show a qualitative agreement with the values obtained from AERONET observations. Further, the smoke plumes that arose due to transport of a wide-spread agricultural crop residue burning are observed nationwide, as shown by MODIS imagery, and HYSPLIT back trajectories. Thus, the present study highlights that the smoke aerosol emissions during crop residue burning occasions play a critical role in the local/regional aerosol microphysical and radiation properties, and hence in the climate variability.

Keywords: biomass burning; smoke aerosols; AERONET; CALIPSO; NAAPS; HYSPLIT back trajectories

check for updates

Citation: Vijayakumar, K.; Devara, P.C.S.; Yadav, S. Investigations on Stubble-Burning Aerosols over a Rural Location Using Ground-Based, Model, and Spaceborne Data. *Atmosphere* **2024**, *15*, 1383. https://doi.org/10.3390/atmos15111383

Academic Editor: Marius M. Cazacu

Received: 14 September 2024
Revised: 12 November 2024
Accepted: 14 November 2024
Published: 17 November 2024

Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Biomass burning (BB) is a significant source of atmospheric aerosols and trace gas emissions, affecting local, regional, and global climates while posing serious risks to human health [1,2]. The composition, size, and mixing state of BB aerosols play a crucial role in determining the optical and microphysical properties of smoke plumes that are released into the atmosphere, significantly influencing the energy balance in the Earth system. During long-range transport, smoke aerosol plumes can change their chemical composition, potentially affecting local and regional air quality when they descend into the planetary boundary layer (PBL) [3]. The processes underlying the smoke aerosol production, transformation, and transport on local and regional scales have been extensively studied over the past decade [4–9]. The production and transport of smoke aerosols play a crucial role in the radiation balance of the earth–atmosphere system [10]. Hence, the uncontrolled emission of black carbon (BB) aerosols has a dangerous impact on human health and when combined can also contribute to climate change [11]. The biomass fire events in India vary

Journal of Materials Chemistry C

ROYAL SOCIETY OF CHEMISTRY

REVIEW

View Article Online
View Journal | View Issue

Check for updates

Cite this: J. Mater. Chem. C, 2025, 13, 3091

Recent breakthroughs in through-space charge transfer in π-stacked molecules as thermally activated delayed fluorescent emitters for OLED applications†

Kummara Madhusudana Rao,[a] Rajavaram Ramaraghavulu,[b] Deepti Kolli,[c] S. Harinath Babu,[d] S. V. Prabhakar Vattikuti*[e] and Mallesham Godumala *[f]

Intramolecular charge transfer through covalent bonds has been a conventional strategy for designing thermally activated delayed fluorescence (TADF) emitters by integrating donor and acceptor moieties along a conjugated backbone for organic light-emitting diode (OLED) applications. However, this approach often faces challenges, including red-shifted emissions, large singlet–triplet energy gaps (ΔE_{ST}), and significant non-radiative decay losses. To mitigate these constraints, through-space charge transfer (TSCT) has emerged as a potential alternative in TADF emitter design. TSCT emitters exhibit small ΔE_{ST}, reduced non-radiative decay, high photoluminescence quantum yields (PLQYs) and accelerated reverse intersystem crossing rates (k_{RISC}). By minimizing direct conjugation between donor and acceptor units, TSCT enables precise tuning of photophysical properties, making it particularly advantageous for achieving deep-blue and blue emission. TSCT in TADF emitters can be realized either through non-conjugated (σ-bonded) or conjugated backbones. However, TSCT TADF emitters with non-conjugated linkers often suffer from thermal stability issues. As a result, TSCT TADF emitters with conjugated backbones have gained considerable attention for overcoming these obstacles. Designing such molecules requires precise structural alignment, particularly with optimal face-to-face stacking and inter-ring distances ideally under 3.5 Å to facilitate TSCT, thereby enhancing TADF properties and device performance. To date, various π-stacked TSCT TADF emitters have been developed, with ongoing research aimed at refining their properties. This review provides a comprehensive overview of the design strategies, synthetic routes, and structure–property relationships of π-stacked TSCT TADF emitters and highlights their performance in OLEDs. Schemes illustrating chemical structures and a table summarizing key photophysical and electroluminescence performance data of reported materials are provided. Finally, we discuss the existing challenges and future directions in this field to guide further advancements.

Received 9th December 2024,
Accepted 7th January 2025

DOI: 10.1039/d4tc05181e

rsc.li/materials-c

1. Introduction

Organic light-emitting diodes (OLEDs) have emerged as a dominant technology in flat-panel displays and lighting, offering outstanding display quality and design flexibility.[1–5] However, OLEDs that rely on conventional organic fluorescent emitters face fundamental limitations due to spin statistics. Upon excitation, the singlets to triplet excitons are generated in a 1 : 3 ratio.[6–8] Conventional fluorescent emitters can only use the 25% of singlet excitons that radiatively decay to emit light, while the 75% of triplet excitons dissipate their energy as heat.[9–12] This limitation caps the internal quantum efficiency (IQE) of fluorescent emitters at just 25%, making them inefficient for practical applications. To conquer these drawbacks, the field shifted toward phosphorescent emitters, which can harvest both singlet and triplet excitons through strong

[a] School of Chemical Engineering, Yeungnam University, 280 Daehak-Ro, Gyeongsan, Gyeongbuk, 38541, South Korea
[b] Department of Physics, School of Applied Science, REVA University, Bangalore, 560064, Karnataka, India
[c] Department of Chemistry, Koneru Lakshmaiah Education Foundation, Green fields, Vaddeswaram, Guntur, Andhra Pradesh, 522302, India
[d] Department of Humanities and Sciences, Annamacharya University, Rajampet, Kadapa (dt), Andhra Pradesh, 516126, India
[e] School of Mechanical Engineering, College of Engineering, Yeungnam University, 280 Daehak-ro, Gyeongsan, Gyeongbuk, 38541, Republic of Korea. E-mail: vsvprabu@gmail.com
[f] Department of Chemistry, Anurag University, Ghatkesar, Hyderabad, Telangana, 500088, India. E-mail: mallesh.iict@gmail.com

† Electronic supplementary information (ESI) available. See DOI: https://doi.org/10.1039/d4tc05181e

This journal is © The Royal Society of Chemistry 2025

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Enhancing Vocabulary Acquisition For Tertiary Level Learners: Strategies For Effective Second Language Learning

Dr. M. Naga Raja Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet

P. Vijaya Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet

Dr. Sagili Satyam
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet

Abstract:

This study investigates the challenges faced by Tertiary level learners in acquiring vocabulary in a second language and explores effective strategies to overcome these challenges. Despite the importance of vocabulary in language learning, many Tertiary level learners struggle to remember and integrate new words into their reading and writing. This research aims to identify the essential vocabulary needed for Tertiary level learners and develop practical exercises and activities to enhance vocabulary acquisition and retention. A mixed-methods approach will be employed, combining both qualitative and quantitative data collection and analysis methods. The findings of this study will provide valuable insights for language educators, policymakers, and researchers, and inform the development of effective language learning programs for Tertiary level learners.

Keywords: vocabulary acquisition, second language learning, Tertiary level learners, language education, mixed-methods research.

Introduction

The traditional method of mastering a foreign language, which focuses on acquiring Listening, Speaking, Reading, and Writing (LSRW) skills, has yielded limited success for learners from rural areas. This suggests that the prevailing teaching and learning methodologies may be inadequate. Consequently, there is a pressing need for innovative and straightforward approaches to second language acquisition.

In response to this challenge, it is imperative that we adopt creative and engaging methods for second language learning, developing strategies that make the learning process more interactive, enjoyable, and effective.

The process of language learning typically begins with listening, followed by speaking, reading, and writing. The human mind is biologically equipped to subconsciously acquire language by focusing on meaning rather

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Moral Foundations In The Modern World: Exploring The Ramayana's Ethical Lessons For Today's Students

N Hari Chandana, Assistant Professor of English, Dept. of Humanities & Sciences, Annamacharya University, Rajampet, Andhra Pradesh .

"Dharma is the path of righteousness and moral integrity, guiding students to make wise, ethical choices in every aspect of their lives."- VALMIKI

Abstract:

In a rapidly changing world, where material success often takes precedence over ethical living, the need for a strong moral foundation is more pressing than ever. The ancient Indian epic Ramayana offers valuable insights into universal human values such as righteousness (dharma), devotion (bhakti), truth (satyam), justice, and selflessness. These values, portrayed through the lives of the epic's characters, provide timeless moral guidance. Considering the dire need of inculcating human values in the modern-day education system, this paper explores how the ethical lessons from the Ramayana can be applied to contemporary education to nurture moral integrity, emotional intelligence, and responsible citizenship in today's students. Through an interdisciplinary approach, the paper demonstrates how these ancient teachings can form the foundation of a value-based education system that addresses the moral and ethical challenges of the modern world.

Index Terms **– Dharma, Bhakti, Satyam, Justice, Selfishness**

I. 1. Introduction

The present generation is navigating an increasingly complex world characterized by technological advancements, shifting social norms, and growing individualism. In such an environment, the importance of fostering moral values is often overlooked, even as issues like social justice, environmental sustainability, and mental health remain pressing concerns. The ancient Indian epic, the Ramayana, offers profound ethical lessons that transcend time and cultural boundaries. Through its characters and their moral dilemmas, the Ramayana provides guidance on how to live a life of integrity, responsibility, and compassion values that are required in this technocratic society.

This research paper aims to explore how the ethical lessons from the Ramayana can be effectively incorporated into modern education system. By integrating the universal values of the Ramayana into contemporary pedagogy, we can help students to cultivate a strong moral foundation, enabling them to navigate the challenges of the modern world with ethical clarity and empathy.

2. The Role of Moral Foundations in Contemporary Society

In today's rapidly evolving world, where material success and individual accomplishments often dominated public discourse, the importance of moral and ethical values can sometimes be overlooked. However, the erosion of these values can lead to societal fragmentation, environmental degradation, and a lack of social responsibility. Human values such as integrity, compassion, justice, and duty form the bedrock of any society that aims to foster harmony and collective well-being.

INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY
Monthly Peer-Reviewed, Refereed, Indexed Journal
Volume - 9, Issue - 2, February - 2025

ISSN(O): 2456-6683
[Impact Factor: 9.241]

IJRCS

DOIs:10.2017/IJRCS/202502021 --:-- Research Paper / Article / Review

Re-Imagining India: A Critical Analysis of Javed Akhtar's 2017 TED Talk

[1] P.Suneetha Naidu, [2] Dr.M.Praveena

[1]Assistant Professor, Dept. of Humanities & Sciences, Annamacharya University, Rajampet, Annamayya District, India

[2]Assitant Professor, Dept. of Humanities & Sciences, Annamacharya University, Rajampet, Annamayya District, India

Email – [1] psuneethanaidu@gmail.com, [2]prachen.2007@gmail.com,

Abstract: *A renowned poet, lyricist, and social commentator Javed Akhtar's TED Talk was delivered in 2017, offered a compelling vision for the future of India. The theme of the talk was on the deeply rooted perspectives in the Indian society, such as pluralism, diversity, and the progressive ideals enshrined in its Constitution. In this talk, Akhtar, explored the critical challenges facing by Indian society, such as intolerance, religious dogma, and social division. He called for the re-imagination of India, has urged the citizens to embrace the secular and inclusive principles that define the nation's democratic ethos.*

This paper critically examines Akhtar's argument, situating it within the historical and contemporary context of Indian society. It explores the themes of nationalism, secularism, and identity, and evaluates how Akhtar's vision contributed to the ongoing discourse on India's future. Through a close reading of his talk, this research seeks to understand the potential for a re-imagined India, one that transcends religious and cultural barriers to build a more harmonious, progressive, and equitable society.

Key Words: *Javed Akhtar, Re-imagining India, Secularism, Nationalism, Diversity, Pluralism, TED Talk.*

1. INTRODUCTION :

TED (Technology, Entertainment, Design) Talks, founded in 1984, is a global platform dedicated to the dissemination of "ideas worth spreading." Initially a conference that brought together experts in the fields of technology, entertainment, and design, TED has since expanded its scope to include a vast range of topics such as science, art, culture, politics, and social issues. The TED format typically features short, powerful talks—usually 18 minutes or less—that aim to inspire, inform, and provoke thought on a global scale. TED Talks are made available online for free, enabling them to reach millions of viewers in the worldwide.

Over the years, TED has become a significant cultural phenomenon, hosting influential speakers such as former U.S. President Bill Clinton, writer Chimamanda Ngozi Adichie, and entrepreneur Elon Musk. TED's global reach and diverse range of topics have made it a powerful tool for sparking conversations, encouraging innovation, and promoting social change. The platform's ability to address complex issues in an accessible and engaging manner has made it an invaluable resource for people seeking to understand the world from multiple perspectives. Through TED Talks, speakers can present their ideas to a global audience, influencing public discourse and inspiring action across various fields of human endeavours.

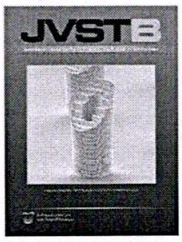
Javed Akhtar, in his 2017 TED Talk titled *"Re-imagining India"* presented a powerful and thought-provoking vision for the future of India, one that emphasizes the need to reclaim the country's secular, pluralistic, and democratic values. As an influential public intellectual, Akhtar uses his platform to highlight the growing challenges of religious intolerance, cultural insularity, and rising nationalism that threaten to divide Indian society. Drawing upon India's rich tradition of intellectualism, cultural diversity, and historical legacy, Akhtar called for a re-imagining of the nation, one that reasserts the values of its founding fathers and embraces diversity as a core principle.

This paper tries to analyse Akhtar's 2017 TED Talk and examines its relevance to contemporary discussions about India's identity, democracy, and the direction the country is heading. By placing Akhtar's ideas in the context of India's historical evolution and current political climate, this paper also aims to uncover the deep connections between his vision and the ongoing challenges that India faces in its future.

AIP Publishing | Journal of Vacuum Science & Te | Sign In

Journal of Vacuum Science & Technology B

Volume 42, Issue 5
September 2024



‹ Previous Article Next Article ›

RESEARCH ARTICLE | AUGUST 26 2024

Effect of sputter power on red-shifted optoelectronic properties in magnetron sputtered Ag/ZnO thin films

GuruSampath Kumar A.; Mahendar C.; Mahesh Kumar U.; Obulapathi L.; HemaChandra Rao B.; Yamuna P.; Thirupathi A.; SomaSundar L. N. V. H.; Venkata Ramana G.

Check for updates

+ Author & Article Information
J. Vac. Sci. Technol. B 42, 054002 (2024)
https://doi.org/10.1116/6.0003813 **Article history**

Share Tools

This study explores Ag/ZnO thin films on glass (Corning 0211) substrates, which were deposited using dc/rf magnetron reactive sputtering at varying Ag-sputter powers. The impact of Ag-sputter power on physical properties, such as structural, surface, compositional, optical, and electrical properties, is systematically explored. Grazing angle x-ray diffraction affirms a single-phase hexagonal wurtzite ZnO structure in all films, predominantly oriented along (002) normal to the substrate. Thin films deposited at 90 W Ag-sputter power exhibit superior structural and morphological properties, including greatest crystallite and grain size, minimum stress, and roughness. Electrical studies indicate that the material exhibits a semiconducting nature, with its electrical resistivity decreasing to a minimum of 0.8 Ω cm at 95 W. At this level of Ag sputter power, the films demonstrate low resistivity, high mobility (0.49 $cm^2/V s$), a charge carrier concentration of 9.6×10^{19} cm^{-3}, and an optical transmittance of 79%, along with an optical band gap energy (Eg) of 3.06 eV. This underscores the influence of Ag sputter power in tailoring Ag/ZnO thin films for optoelectronic applications.

Topics
Band gap, Electrical properties and parameters, Optoelectronic properties, Crystal structure, Electrical resistivity, Magnetron sputtering, Sputter deposition, Thin films, X-ray diffraction

REFERENCES

1. S. Usha and S. Suraj, *J. Pure Appl. Phys.* 10, 10 (2022). https://doi.org/10.4172/2320-2459.10.2.005
Google Scholar

2. M. Salem, H. Ghannam, A. Almohammedi, J. Salem, Y. Litaiem, I. Massoudi, M. Gassoumi, and M. Gaidi, *Silicon* 15, 7321 (2023). https://doi.org/10.1007/s12633-023-02586-1
Google Scholar Crossref

3. I. López, L. Garza-Tovar, E. T. Adesuji, and M. Sanchez-Dominguez, "Colloidal core-shell metal, metal oxide nanocrystals, and their applications," in *Colloidal Metal Oxide Nanoparticles* (Elsevier, Netherlands, 2020), pp. 125–181.
Google Scholar Crossref

4. H. Krysova, V. Mansfeldova, H. Tarabkova, A. Pisarikova, Z. Hubicka, and L. Kavan, *J. Solid State Electrochem.* 28, 2531 (2024). https://doi.org/10.1007/s10008-023-05766-6
Google Scholar Crossref

5. D. R. Sahu, *Microelectron. J.* 38, 1252 (2007). https://doi.org/10.1016/j.mejo.2007.09.025
Google Scholar Crossref

6. D. J. Rani, A. GuruSampath Kumar, and T. S. Rao, *J. Alloys Compd.* 694, 694 (2017). https://doi.org/10.1016/j.jallcom.2016.10.048
Google Scholar Crossref

7. A. GuruSampath Kumar, T. Sofi Sarmash, L. Obulapathi, D. Jhansi Rani, T. Subba Rao, and K. Asokan, *Thin Solid Films* 605, 102 (2016). https://doi.org/10.1016/j.tsf.2015.12.024
Google Scholar Crossref

8. S. H. Choe, Y. S. Kim, J. Y. Choi, Y. J. Park, B. C. Cha, Y. M. Kong, and D. Kim, *Korean J. Met. Mater.* 57, 506 (2019). https://doi.org/10.3365/KJMM.2019.57.8.506
Google Scholar Crossref

9. F. Lekoui, M. Ouchabane, H. Akkari, S. Hassani, and D. Dergham, *Mater. Res. Express* 5, 106406 (2018). https://doi.org/10.1088/2053-1591/aadafa
Google Scholar Crossref

10. F. Lekoui, R. Amrani, S. Hassani, E. Garoudja, W. Filali, M. Ouchabane, N. Hendaoui, and S. Oussalah, *Opt. Mater.* 150, 115151 (2024). https://doi.org/10.1016/j.optmat.2024.115151
Google Scholar Crossref

11. R. Ramadan, S. Dadgostar, M. Manso –Silván, R. Pérez-Casero, M. Hernandez-Velez, J. Jimenez, and O. Sanchez, *Mater. Sci. Eng. B* 276, 115558 (2022). https://doi.org/10.1016/j.mseb.2021.115558
Google Scholar Crossref

12. G. O. Rabell, M. R. A. Cruz, and I. Juárez-Ramírez, *Mater. Sci. Semicond. Process.* 134, 105985 (2021). https://doi.org/10.1016/j.mssp.2021.105985
Google Scholar Crossref

13. A. Gurusampath Kumar, T. S. Sarmash, D. J. Rani, L. Obulapathi, G. V. V. B. Rao, T. S. Rao, and K. Asokan, *J. Alloys Compd.* 665, 86 (2016). https://doi.org/10.1016/j.jallcom.2016.01.029
Google Scholar Crossref

14. R. Swanepoel, *J. Phys. E: Sci. Instr.* 16, 1214 (1983). https://doi.org/10.1088/0022-3735/16/12/023
Google Scholar Crossref

15. A. GuruSampath Kumar, X. Li, Y. Du, Y. Geng, and X. Hong, *Appl. Surf. Sci.* 509, 144770 (2020). https://doi.org/10.1016/j.apsusc.2019.144770
Google Scholar Crossref

16. Z. Ning, Y. Wang, S. Li, K. Tang, and M. Wen, *Vacuum* 210, 111888 (2023). https://doi.org/10.1016/j.vacuum.2023.111888
Google Scholar Crossref

17. G. S. Kumar, X. Li, Y. Du, Y. Geng, and X. Hong, *J. Alloys Compd.* 798, 467 (2019). https://doi.org/10.1016/j.jallcom.2019.05.227

We and our 0 IAB TCF partners store and access information on your device for the following purposes: store and/or access information on a device, advertising and content measurement, audience research, and services development, personalised advertising, and personalised content.

Personal data may be processed to do the following: use precise geolocation data and actively scan device characteristics for identification.

Our third party IAB TCF partners may store and access information on your device such as IP address and device characteristics. Our IAB TCF Partners may process this personal data on the basis of legitimate interest, or with your consent. You may change or withdraw your preferences at any time by clicking on the cookie icon or link; however, as a consequence, you may not see relevant ads or personalized content.

Our website may use these cookies to:

- Measure the audience of the advertising on our website, without profiling
- Display personalized ads based on your navigation and your profile
- Personalize our editorial content based on your navigation
- Allow you to share content on social networks or platforms present on our website
- Send you advertising based on your location

Privacy Policy

Customize Your Choices
Accept All
Continue Without Accepting

Contents lists available at ScienceDirect

Case Studies in Thermal Engineering

journal homepage: www.elsevier.com/locate/csite

Case study of radiation absorptive and chemical reactive impacts on unsteady MHD natural convection flowing of Cu-Al_2O_3/H_2O hybridized nanofluid

Rekha Satish [a], Buchanahalli Thimmaiah Raju [a], Mummadisetty Umamaheswar [b], Vijayakumar Varma Sibyala [a], Charankumar Ganteda [c], Assmaa Abd-Elmonem [d], Fayza Abdel Aziz ElSeabee [e], Neissrien Alhubieshi [d,*], Mohamed R. Eid [f,g], Wasim Jamshed [h,i], Hijaz Ahmad [j,k,l,m]

[a] Department of Mathematics, REVA University, Bangalore, Karnataka, India
[b] Annamacharya Institute of Technology and Sciences, Rajampet, A.P., India
[c] Department of Engineering Mathematics, College of Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, 522301, Andhra Pradesh, India
[d] Department of Mathematics, College of Science, King Khalid University, Abha, Saudi Arabia
[e] Department of Mathematics, College of Science, Qassim University, Buraydah, 51452, Saudi Arabia
[f] Center for Scientific Research and Entrepreneurship, Northern Border University, Arar 73213, Saudi Arabia
[g] Finance and Insurance Department, College of Business Administration, Northern Border University, Arar, 1321, Saudi Arabia
[h] Department of Mathematics, Capital University of Science and Technology (CUST), Islamabad, 44000, Pakistan
[i] Department of Computer Engineering, Biruni University, Topkapi, Istanbul, Turkey
[j] Operational Research Center in Healthcare, Near East University, Nicosia/TRNC, 99138 Mersin 10, Turkey
[k] Department of Mathematics, Faculty of Science, Islamic University of Madinah, Madinah, 42351, Saudi Arabia
[l] Department of Mathematics, College of Science, Korea University, 145 Anam-ro, Seongbuk-gu, Seoul 02841, South Korea
[m] Department of Technical Sciences, Western Caspian University, Baku, 1001, Azerbaijan

ARTICLE INFO

Handling Editor: Huihe Qiu

Keywords:
Hybrid nanofluids
Heat and mass transference
Partial differential equations
Buoyancy force
Magnetized force
Heat absorption
Chemical reaction

ABSTRACT

Magnetohydrodynamic hybrid nanofluid (Cu-Al_2O_3/H_2O) flow along an infinitely long plate accelerated exponentially with constant species diffusion, varying heat source and under the chemical reactive, radiation absorptive influences are analysed. Non-dimensional partial differential equation system is derived from the governing nonlinear boundary layer equations. Both analytical and numerical solutions to these equations are obtained using Laplace transform approach and finite difference method. The investigation has been conducted across a broad spectrum of magnetic parameters, thermal Grashof numbers, mass Grashof numbers, radiation absorption parameters, and chemical reaction parameters. Graphical representations are used to show the implications of factors like Schmidt number, mass Grashof number, chemical reactive variable, thermal Grashof number, absorption of radiation on flow, heat, mass transfer and on their gradients as well. Velocity enhances with rising amounts of thermal and solutal buoyancy forces. Reversal tendency is noticed in situation of chemical reaction parameter and magnetic field parameter. Temperature transmission rate of hybrid nanofluids is higher than conventional nanofluids and pure fluids.

* Corresponding author.
E-mail address: nalhbshi@hotmail.com (N. Alhubieshi).

https://doi.org/10.1016/j.csite.2024.105536
Received 22 September 2024; Received in revised form 12 November 2024; Accepted 21 November 2024
Available online 24 November 2024
2214-157X/© 2024 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

International Journal of
Science, Architecture, Technology and Environment

Necessity of Managerial Communication Course for MBA Students

Dr. M. Praveena[1*]

[1]*Assistant Professor, Dept. of Humanities and Sciences, Annamacharya University, Rajampet*

prachen.2007@gmail.com

[*]*Corresponding author*

DOI: https://doi.org/10.63680/ijsate0525113.128

Abstract

There were the days when management students outperformed all other professional students in their level of communication. MBA students used to be role models to others with their creative communication skills. But now, the level of efficiency has got down and they need some curriculum assistance to upgrade their communicative competence. As a result, in most of the institutions offering MBA courses, managerial communication has been introduced as part of the curriculum. Managerial skills are a bit different skills from ordinary communication skills. The present paper portrays that difference between managerial skills and communication skills. And it also discusses about the need for managerial skills for present-day MBA graduates.

Keywords: Managerial skills, Communication Skills, Curriculum, Efficiency, MBA

Introduction

As everybody is aware, communication is an exchange of information from sender to receiver. These roles may be complementary based on the context. This exchange of messages may take place verbally or non-verbally. At elementary level, this transaction conveys some message; at intermediate level, it helps to get the things done, whereas at high level, it involves people getting the work done in an inclusive and developmental way. These three levels, in fact, are using communication for their desired outcomes, but at differing dynamics. The high-level communication, the top-notch one, involves both verbal transactions and inter-personal dynamics blended together in achieving the desired results. MBA students usually begin their career at managerial level. A manager is supposed to manage money, material and men. Managing these three M's is a critical job, and one should demonstrate much discretion and intelligence for better outcomes.

Communication also builds relationships required for the survival of the organization. Many times, what we say' is not much important how 'how we say it'. Word choice, voice inflexion, appropriate pauses make this difference. The phrases like, 'Thank you', 'I am sorry', 'Excuse me', and 'No problem' can make much difference. They build good rapport and trust between colleagues, higher ups and subordinates. Communication liaisons between top level and bottom level managements.

https://africanjournalofbiomedicalresearch.com/index.php/AJBR
Afr. J. Biomed. Res. Vol. 27 (October 2024); 2990-2995

Research Article

Spectroscopic Properties of Dy^{3+}-Doped Phosphors Derived from Agricultural Waste for Solid State Lighting Applications

Lingam Lakshmi Devi[1*], Boggala Sreenivasulu[1] and Kothakula Keerthi[2]

[1]*Department of Physics, Annamacharya University, Rajampet-516126, India.*
[2]*Department of Chemistry, Annamacharya University, Rajampet-516126, India.*

***Corresponding Author:** Lingam Lakshmi Devi*
**Email: lakshmidevilingam@gmail.com and lld@aitsrajampet.ac.in*

ABSTRACT

The Dy^{3+}-doped di-calcium silicate (Ca_2SiO_4) phosphors have been synthesized from conventional solid state reaction method by utilizing the agricultural waste materials. Agricultural materials as raw chemicals of SiO_2 and CaO from rice husk and egg shell powders are consumed in its place of chemicals which were synthesized from non-renewable raw materials. The luminescence characteristics of prepared phosphors were studied through FLS 980 spectrometer measurements. Excitation spectrum of Dy^{3+}-doped di-calcium silicate phosphorsexhibited three intense bands at 351, 366 and 387 nm are observed within the near UV and blue regions. Luminescence spectra of Dy^{3+}-doped phosphors exhibits sharp intense characteristic blue and yellow emission peaks due to the transitions of $^4F_{9/2} \rightarrow {}^6H_{15/2}$ and $^4F_{9/2} \rightarrow {}^6H_{13/2}$, respectively. Emission appearances of established phosphors such as CIE co-ordinates, CCT, CP, CRI and lifetimes, etc., of Dy^{3+} ion have been measured. All the results have been deliberated with reported values and found to be better than many of the reported phosphors derived from agricultural waste materials. Hence, present prepared phosphors might be useful to develop low-cost solid state lightning devices as well as effective consumption of agricultural and food waste materials.

Key words: Rice husk ash, Egg shells, Ca_2SiO_4 phosphors, Dy^{3+} ions, Color coordinates.

**Author of correspondence Email: lakshmidevilingam@gmail.com and lld@aitsrajampet.ac.in.*

Received: 03.10.2024 Accepted: 24.10.2024

DOI: https://doi.org/10.53555/AJBR.v27i3.7880

© 2024 The Author(s).
This article has been published under the terms of Creative Commons Attribution-Noncommercial 4.0 International License (CC BY-NC 4.0), which permits noncommercial unrestricted use, distribution, and reproduction in any medium, provided that the following statement is provided. "This article has been published in the African Journal of Biomedical Research"

1. INTRODUCTION

A large number of phosphors materials have been developed from different metals and as well oxides. Here phosphors are synthesized by utilization of agricultural waste materials such as rice husk and egg shells, which are contains more amount of SiO_2 and CaO, small quantities of other metals likeAl, Fe, Mg, P, Na, K and C. Through the sintering technique rice husk and egg shells are synthesized to derive/produce raw materials of SiO_2 and CaO. After completion of sintering process, the small quantities of other metals are evaporated/decreased, but carbon element was completely is not been identified, it is contaminated with environment and gets evaporated.

Now a day'ssolid state reaction technique [1] have been developed as a promising for synthesizing high purity, single and multicomponent/phase oxide phosphors. This method having more advantages such as high purity, high degree of homogeneity, high yield, cost effectiveness and as well as environment friendly [2]. Moreover, all the other methods are very complex in preparation process and cost also too much.Researchers and scientists are leading research in examination for appropriate host matrices that can be utilized to synthesize phosphors for solid state lighting applications. Present theme on phosphors isintensive on the production of white light with low cost materials it might be used in solid

https://africanjournalofbiomedicalresearch.com/index.php/AJBR
Afr. J. Biomed. Res. Vol. 27 (October 2024); 2996-2999

Research Article

Biological Applications of Nano C-BN Synthesised by Using Ball Milling Method

Kothakula Keerthi[1*], Boggala Sreenivasulu[1], Kandukuri Uma devi[2], Lingam Lakshmi Devi[3]

[1,2]Department of Chemistry Annamacharya University, Rajampet 516126.*
[1,3]Department of Physics, Annamacharya University, Rajampet 516126.

***Corresponding Author:** Kothakula Keerthi*
**Email: kothakulakeerthy@gmail.com*

Abstract:
This research article details the synthesis and characterization Cubic boron nitride(c-BN) finds extensive applications in mechanical and electronic industries due to its attractive properties. Nano c-BN has a remarkable influence on the properties. The surface morphology and elemental analysis of the samples were done by SEM and EDX studies. EDX confirmed the presence of Boron and nitrogen in the sample. From SEM images indicate the agglomerated morphology of c-BN particles with irregular shape. Cubic structure was confirmed from XRD studies. Antibacterial tests demonstrated that the cubic boron nitride nano particles exhibit significant antibacterial activity against both Gram-positive and Gram-negative microorganisms.

Key words: EDAX, SEM, Nano particle, Antibacterial activity

**Author of correspondence Email: kothakulakeerthy@gmail.com*

Received: 07.10.2024, Accepted: 24.10.2024

DOI: https://doi.org/10.53555/AJBR.v27i3.7881

© 2024 The Author(s).
This article has been published under the terms of Creative Commons Attribution-Noncommercial 4.0 International License (CC BY-NC 4.0), which permits noncommercial unrestricted use, distribution, and reproduction in any medium, provided that the following statement is provided. "This article has been published in the African Journal of Biomedical Research"

Introduction:

Boron nitride (BN) is considered iso-electronic with carbon due to the positioning of boron and nitrogen adjacent to carbon in the periodic table. BN exists in four polymorphic forms: hexagonal (h-BN), rhombohedral (r-BN), wurtzite (w-BN), and cubic (c-BN)(1-3). h-BN has a structure similar to graphite, with delocalized pi orbitals and sp2 hybridization, and it is commonly used in a variety of applications such as additives in cosmetics, lubricants for alloys, plastics, and resins. Additionally, its combination with carbon nanotubes (CNTs) enhances its potential for use in electronic devices and gas storage materials. In r-BN, boron and nitrogen atoms are arranged in a four-membered ring structure, with a displacement pattern every fourth layer, repeating the initial layer(4,5). It also exhibits sp2 hybridization, where each atom forms three covalent bonds with its neighboring atoms. In w-BN, the boron and nitrogen atoms are organized in six-membered rings with a boat configuration between the layers, while c-BN features a chair configuration. Studies suggest that w-BN is harder than other borides, but softer than c-BN(6).

Cubic boron nitride (c-BN) is known for its exceptional hardness, which is close to that of diamond, and it displays sp3 hybridization similar to diamond(7-8). As a semic0onductor, c-BN has a wide band gap, excellent optical properties, high thermal conductivity, and chemical inertness. It is also transparent across a wide spectral range from ultraviolet to visible light. Due to its wide band gap and thermal stability, c-BN is highly suitable for high-temperature power electronic applications, unlike diamond. Furthermore, c-BN is used in cutting tools and optical instruments such as UV detectors and emitters. Recent research on c-BN nanostructures, including

Literary Vibes, An International Journal of English Language and Literature Studies
Volume 14, Issue 1, January, 2025
ISSN: 2320-6896 (Print) & ISSN: (Electronic)
doi: **10.5281/zenodo.14898288**
www.literaryvibes.in

LITERARY VIBES

Key Elements influencing the enhancement of Speaking Skills

Mr. P. Vijaya Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet
e-mail: sendtopatlegar@gmail.com

Abstract:

Speaking involves the construction and sharing of meaning through verbal and non-verbal symbols across various contexts. Low motivation in speaking presents a significant challenge for educators, as students often exhibit reluctance to speak due to shyness and a lack of predisposition to express themselves in public, especially when required to share personal information or opinions. This research employs a realist ethnographic approach, complemented by Research and Development (R&D), making it a comprehensive study within qualitative research.

Language teachers continuously develop speaking skills using various techniques and strategies. Data indicates that selected teachers predominantly employ the communicative approach, direct method, audio-lingual method, among others. Common techniques include discussions, role play, oral reports, questions and answers, conversations, and debates. Teachers effectively assess students' performance, offering corrections in engaging ways such as repetition, collaborative error correction, and providing opportunities for students to seek help both in and outside the classroom.

Additionally, teachers consistently use strategies that foster learners' speaking skills, creating activities that facilitate communication. They often develop supplementary materials like conversations, discussions, questions and answers, storytelling, and debates to support English speaking activities. Analysis of the data reveals that these activities are adapted to meet learners' needs, enhancing the effectiveness of the teaching and learning process. This tailored, interactive, and supportive approach underscores the importance of employing diverse techniques to develop students' speaking abilities.

Keywords: speaking; skill development; factors of speaking.

Introduction

Teachers have access to a plethora of alternative strategies for teaching speaking, which can significantly benefit teacher training institutions in developing more relevant English-speaking activities for both formal and non-formal education. These strategies cater to teachers' actual needs, addressing both theoretical and practical aspects of language instruction. Additionally, these strategies can serve as valuable references for teachers in their quest for professional self-improvement.

Some findings by the teachers can initiate self-reflection on their current speaking practices, leading to enhanced teaching methodologies and better student outcomes. However, teaching speaking is not without its challenges. Teachers often encounter issues such as

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Ai-Driven Language Learning For Indian Engineering Students: A Study On Effectiveness And Perceptions"

P. Vijaya Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet
Annamayya District, Andhra Pradesh.

Abstract:
The integration of Artificial Intelligence (AI) into language education is reshaping traditional approaches to English language acquisition, especially within multilingual contexts such as India. This study investigates the impact of AI-powered tools—ChatGPT, Duolingo, and Grammarly—on improving linguistic competence, motivation, and learner autonomy among Indian engineering undergraduates. Employing a mixed-methods design, the study involved 120 intermediate-level English learners from engineering colleges across India. Quantitative data from pre- and post-tests assessing grammar, vocabulary, and writing skills were complemented by qualitative insights from semi-structured interviews and learner diaries. Results revealed statistically significant gains in all measured competencies in the experimental group, with enhanced learner engagement and self-directed learning. Nevertheless, challenges such as digital access disparities and over-dependence on AI tools persist. This article contributes to current discourse on AI-assisted language acquisition and offers context-sensitive pedagogical recommendations tailored to Indian bilingual and technical education settings.

Keywords:
Artificial Intelligence, Engineering Students, English Language Skills, Language Learning Tools, India, Educational Technology, Bilingual Education

1.Introduction

The globalisation of the workforce has made English proficiency a prerequisite for professional success, especially in STEM fields. In India, English occupies a unique status as a functional language for higher education, technological research, and corporate communication. Despite widespread English instruction from early schooling, Indian engineering students frequently exhibit suboptimal communicative competence. This disparity stems from multiple factors: teacher-centred pedagogy, inadequate exposure to spoken English, large class sizes, and limited contextual relevance in learning materials. Moreover, India's bilingual educational landscape—where English often coexists with regional languages as mediums of instruction—further complicates the acquisition process.

ARTICLE IN PRESS

Journal of Radiation Research and Applied Sciences xxx (xxxx) xxx

Contents lists available at ScienceDirect

Journal of Radiation Research and Applied Sciences

journal homepage: www.journals.elsevier.com/journal-of-radiation-research-and-applied-sciences

Corrigendum to "Optimization of 3D hydromagnetic Casson fluid flow over a permeable stretching surface using RSM and AI" [J. Radiat. Res. Appl. Sci. 18/2 101554]

P. Lekkala [a], V. Sannu [b], P.K.D.N. Murthy [c], V.V. Sibyala [d], Charankumar Ganteda [e], Muhammad Amer Qureshi [f,*], Kamel Guedri [g], Syed M. Hussain [h], Abdulrazak H. Almaliki [i], Mustafa Bayram [j]

[a] Department of Mathematics, Sai Rajeswari Institute of Technology, Proddatur, 516360, A.P, India
[b] Department of Mathematics, Vignan's Foundation for Science, Technology and Research, Vadlamudi, Guntur, 522213, A.P, India
[c] Adithya College of Engineering and Technology, Bengalore, Karnataka, India
[d] Department of Mathematics, School of Applied Sciences, REVA University, Bengaluru, Karnataka, India
[e] Department of Mathematics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, 522302, Andhra Pradesh, India
[f] Department of Mathematical and Physical Sciences, College of Arts and Sciences, University of Nizwa, Nizwa, Sultanate of Oman
[g] Mechanical Engineering Department, College of Engineering and Architecture, Umm Al-Qura University, P. O. Box 5555, Makkah, 21955, Saudi Arabia
[h] Department of Mathematics, Faculty of Science, Islamic University of Madinah, Madinah, 42351, Saudi Arabia
[i] Department of Civil Engineering, College of Engineering, Taif University, Taif, 21944, Saudi Arabia
[j] Department of Computer Engineering, Biruni University, 34010, Istanbul, Turkey

L. Padmavathi, Sannu Venkateswarlu, Punith Kumar D.N, S.V.K. Varma

< Department of Mathematics, ANNAMACHARYA UNIVERSITY, Rajampet, Annamayya District, Andhra Pradesh, INDIA, 516126;

Department of Mathematics and Statistics, School of Applied Sciences and Humanities, Vignan's Foundation for Science, Technology and Research, Vadlamudi, Guntur-522213, Andhra Pradesh, India.

Basic Science Engineering and Humanities, Atria Institute of Technology, BENGALURU, 560024.

Department of Mathematics, REVA University- 560064, Karnataka, India.

Muhammad Amer Qureshi muataz804@yahoo.com

The authors regret that the names and affiliations of the first four authors were incorrectly published in the original article. The corrected names and affiliations are provided above.

The authors would like to apologise for any inconvenience caused.

DOI of original article: https://doi.org/10.1016/j.jrras.2025.101554.
This article is part of a special issue entitled: Radiation Sciences and Applications published in Journal of Radiation Research and Applied Sciences.

* Corresponding author.
E-mail address: muataz804@yahoo.com (M.A. Qureshi).

https://doi.org/10.1016/j.jrras.2025.101613

1687-8507/© 2025 The Author(s). Published by Elsevier B.V. on behalf of The Egyptian Society of Radiation Sciences and Applications. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

Please cite this article as: P. Lekkala et al., *Journal of Radiation Research and Applied Sciences*, https://doi.org/10.1016/j.jrras.2025.101613

Nano-Structures & Nano-Objects 41 (2025) 101446

Contents lists available at ScienceDirect

Nano-Structures & Nano-Objects

journal homepage: www.elsevier.com/locate/nanoso

Numerical study on thermal radiation and chemical reaction impacts on Prandtl nanofluid flow over a bilinear stretching sheet with heat generation and absorption: Response surface methodology

L. Padmavathi [a], S.Geethan Kumar [b], Charankumar Ganteda [c], S.V.K. Varma [d], E. Gouthami [e], G. Jayalalitha [f], B.Murali Mohan Rao [g], Vediyappan Govindan [h], Busayamas Pimpunchat [i], Haewon Byeon [j,*]

[a] Department of Mathematics, ANNAMACHARYA University, Annamayya District, Rajampet, A.P 516126, India
[b] Department of Mathematics, JNTUA College of Engineering, Kalikiri, A.P, India
[c] Department of Mathematics, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur (Dt), Andhra Pradesh, India
[d] Department of Mathematics, REVA University, Benguluru, Karnataka 560064, India
[e] Lendi Institute of Engineering & Technology (Autonomous), Denkada, Vizianagaram, Andhra Pradesh 535005, India
[f] Department of Mathematics, Vidya Jyothi Institute of Technology, Aziz nagar, Hyderabad 500075, India
[g] Pottisriramulu Chalavadi Mallikharjuna rao College of Engineering and Technology, Kothapeta, Vijayawada, Andhra Pradesh 520001, India
[h] Department of Mathematics, Hindustan Institute of Technology and Science, Chennai, India
[i] Department of Mathematics, School of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok 10520, Thailand
[j] Convergence Department, Korea University of Technology and Education, Cheonan, South Korea

ARTICLE INFO

Keywords:
Prandtl Nanofluid
Stretching Sheet
Thermophoresis
Brownian Motion
Heat source/sink

ABSTRACT

The study focuses on the three-dimensional flow of a non-Newtonian Prandtl nanofluid with electrical conductivity, flowing over a bilinear expanding surface within a porous medium. These flows in porous medium are applied in water purification processes, petroleum industries and also chemical factories. The exploration examines various heat and mass transport phenomena, including the consequences of thermal radiation, thermophoresis, Brownian motion, substance response and heat source/sink. The governing partial differential equations are reformulated into a system of nonlinear ordinary differential equations through the application of appropriate similarity transformations. These equations are subsequently solved by using numerical methods bvp4c as well as shooting method. Furthermore, the arithmetical values for the friction factor and the temperature and accumulation constants are provided in tables. It is experiential that the Prandtl fluid constraint enhances the axial and transverse velocities, while the temperature sharing shows an inverse relationship. The temperature and concentration distributions have an opposite attitude with the influence of Brownian motion parameter.

1. Introduction

Bio-convection, the coordinated movement of microorganisms driven by gradients in the contiguous liquid, has garnered substantial research concentration due to its essential involvement in a variety of natural phenomena, counting nutrient convey, ecosystem dynamics, and the incidence of damaging algal blooms. In addition, Bio-convection has fascinated considerable concentration for its possible utilisations in fields such as biotechnology, bioengineering, and waste water management. This study seeks to deliver a thorough evaluation of existing research on the performance of microorganisms in bio-convection within a Prandtl nanofluid flowing over a expanded flat exterior situated in a non-Darcy porous medium. By exploratory the presentsituation of investigate in this meadow, this assessment aims to recognize information voids as well asprobable approaches for supplementary examination.

The introduction of nanofluids into bio-convection assessments adds complexity owing to the involvement of nanoparticles. Prandtl nanofluids, known for their improved thermal characteristics, have become increasingly important in new years. The Forchheimer drag term

* Corresponding author.
E-mail addresses: bhwpuma@naver.com, byeon@inje.ac.kr (H. Byeon).

https://doi.org/10.1016/j.nanoso.2025.101446
Received 14 December 2024; Received in revised form 22 January 2025; Accepted 1 February 2025
2352-507X/© 2025 Elsevier B.V. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

History And Diaspora In The Study Of Arundhati Roy's The God Of Small Things.

Dr.Sagili.Satyam
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet
Annamayya District, Andhra Pradesh.

Dr. Nagula. Ankanna
Associate. Professor of English
Department of English
Yogivemana University, Vemanapuram
Kadapa District, Andhra Pradesh.

P. Vijaya Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet
Annamayya District, Andhra Pradesh.

Dr. M. Naga Raja Kumar
Assistant Professor of English
Department of Humanities and Sciences
Annamacharya University, Rajampet
Annamayya District, Andhra Pradesh.

Abstract:

Arundhati Roy is an Indian writer and female activist. From the fifteenth century to the twentieth century, the Europeans colonized the lands in other continents. In the nineteenth century, the main political purpose promoted the newly-born genre named 'novel'. Knowledge and power are the dominating themes that over-rule the deep nature of imperialism and literature. These themes indicate the superior literature, culture and tradition as the standard form of acceptance. This is history itself. In the result of the colonization, the migration and transition were not avoidable issues. Therefore, in this displacement, the new identity has been made. People's customs, cultures and beliefs are mixed with colonizers' unconsciously. India is a multicultural country. There are many various cultures in this country and also during the colonization and the dominance of Britain over India, the changes were made in its customs and cultures. The plot of Roy's novel is made from the ancient history of the Syrian-Christian community and the complex intermixture of their faith with local Hindu social structures. In such society, people married other people with different beliefs. The concepts that can be mentioned in this novel are history, diaspora, hybridity, the role of women in Indian society, globalization, and resistance.

BioNanoScience _####################_
https://doi.org/10.1007/s12668-025-01914-6

RESEARCH

Structural, Optical, and Antibacterial Properties of NiO and BaO doped NiO- Prepared by Co-precipitation Method

Sreenivasa Kumar Godlaveeti[1,3] · N. Rajesh[2] · Mohamed Ouladsmane[4] · Ahmed M. Aljuwayid[4] · K. Riazunnisa[2] · Shaik Mohammed Azharuddin[2] · Rajababu Chintaparty[5]

Accepted: 25 March 2025
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025

Abstract
The study examines the mechanisms of action of antibacterial and optical nickel oxide (NiO), as well as BaO-doped NiO (Ba-NiO), synthesized using the co-precipitation method. Structural analysis shows that adding BaO changes the NiO lattice by adding distortions, raising crystallinity, and lowering defect density. Comparing the shapes of pure NiO nanoparticles shows that they are mostly spherical, while adding BaO makes them a mix of spherical particles and nanorods. Optical investigations highlight a shift in the absorption edge of Ba-NiO toward longer wavelengths, indicating a decrease in bandgap energy. Antibacterial tests show that pure NiO works better because it has more defects, a better shape, and more surface area, all of which make it easier for reactive oxygen species to form and for bacteria to interact with it. Meanwhile, the introduction of BaO enhances the optical attributes of the material but slightly reduces its antibacterial efficiency by lowering the defect density and altering its surface structure. This study provides a foundation for optimizing NiO-based materials for applications in biotechnology and related fields.

Keywords Nickel oxide (NiO) · BaO-doped NiO (Ba-NiO) · Antibacterial properties · Optical properties

1 Introduction

Nickel oxide (NiO) is widely recognized as a p-type semiconductor due to its exceptional optical properties, chemical stability, and extensive use in applications like optoelectronics, photocatalysis, and biosensors. Its high transparency, adjustable electrical conductivity, and broad bandgap make it suitable for devices like solar cells, photodetectors, and energy storage systems. Several factors, including crystallite size, defect density, and structural changes, significantly impact the optical efficiency of NiO by modifying its light absorption and charge transport properties [1].

Apart from its optical applications, NiO has demonstrated antibacterial capabilities, making it a promising material for biomedical coatings and antimicrobial treatments. Its capacity to produce reactive oxygen species (ROS) is a key mechanism responsible for bacterial inhibition, as it damages cell membranes and disrupts metabolic functions. Additionally, the release of Ni^{2+} ions enhances its antibacterial effectiveness by affecting microbial protein function and genetic integrity. Various NiO-based nanocomposites, including NiO-ZnO and NiO-Ag_2O, have been explored to enhance antimicrobial properties through synergistic interactions. Despite these developments, the impact of BaO incorporation on NiO's antibacterial activity, particularly its influence on ROS production and bacterial cell interactions, requires further investigation. A deeper understanding of these effects could lead to the development of improved antimicrobial materials [2, 3].

For this study, *Escherichia coli* (*E. coli*) and *Bacillus* species were chosen as model bacteria to analyze the antibacterial behavior of NiO and Ba-NiO nanoparticles.

✉ Rajababu Chintaparty
baburaja46@gmail.com

1 School of Energy and Power Engineering, Dalian University of Technology, Dalian 116024, China

2 Department of Biotechnology and Bioinformatics, Yogi Vemana University, Kadapa 5160005, India

3 Department of Physics, Rajeev Gandhi Memorial College of Engineering and Technology, Nandyal, Andhra Pradesh 518501, India

4 Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia

5 Department of Physics, Annamacharya University, Rajampet, Andhra Pradesh 516126, India

For Approval

ECS Journal of Solid State Science and Technology, 2025 **14** 053001
2162-8777/2025/14(5)/053001/7/$40.00 © 2025 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited. All rights, including for text and data mining, AI training, and similar technologies, are reserved.

Dielectric and Electrochemical Properties of BaO-Doped NiO: A Study on Optimized Composition for Enhanced Performance

Ammar M. Tighezza,[1,=] Sreenivasa Kumar Godlaveeti,[2,=] Charan Kuchi,[3] Gopal Naik B,[4] Sreedevi Gedi,[5] Ramamanohar Reddy Nagireddy,[6] and Rajababu Chintaparty[7,z]

[1]*Department of Chemistry, P.O.Box 2455,College of Science, King Saud University, Riyadh 11451, Saudi Arabia*
[2]*School of Energy and Power Engineering, Dalian University of Technology, Dalian-116024, People's Republic of China*
[3]*Department of Physics, Madanapalle Institute of Technology & Science, Madanapalle, 517325, India*
[4]*Department of Physics, Annamacharya Institute of Technology & Sciences, Tirupati-517520, India*
[5]*Department of Material Physics, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Thandalam, Chennai, 602105, India*
[6]*Department of Materials Science and Nanotechnology, Yogi Vemana University, Vemanapuram, Y.S.R. Kadapa, Andhrapradesh 516005, India*
[7]*Department of Physics, Annamacharya University, Rajampet 516126, India*

This study investigates the impact of barium oxide (BaO) doping on the structural, morphological, and functional properties of nickel oxide (NiO), a material widely used in energy storage applications. NiO, known for its thermal stability and environmental safety, faces limitations such as moderate dielectric constant, low electrical conductivity, and structural defects. To address these challenges, BaO was incorporated into NiO using the co-precipitation method, resulting in a mixed morphology of spherical nanoparticles and nanorods. X-ray diffraction analysis confirmed enhanced crystallinity, reduced defect density, and lattice distortions due to BaO doping. Dielectric studies revealed a significant improvement, with BaO-doped NiO exhibiting a dielectric constant of 232 compared to 28 for pure NiO at 10^6 Hz, attributed to increased interfacial polarization and improved charge carrier mobility. Electrochemical analyses further demonstrated enhanced conductivity and reduced charge transfer resistance for the doped samples. The findings highlight the potential of BaO-doped NiO as a superior material for energy storage, offering insights into doping strategies to optimize functional performance for next-generation applications.
© 2025 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited. All rights, including for text and data mining, AI training, and similar technologies, are reserved. [DOI: 10.1149/2162-8777/adcfc3]

Manuscript submitted January 19, 2025; revised manuscript received April 4, 2025. Published May 6, 2025.

Energy storage technologies are crucial for addressing global energy needs, particularly in stabilizing renewable energy integration, enhancing electric vehicle performance, and ensuring reliable power supply. Despite significant advancements, many energy storage systems face challenges such as low energy density, high costs, and limited durability, which restrict their widespread application. Among the numerous materials studied for energy storage, metal oxides have gained attention due to their remarkable thermal stability, tunable electronic properties, and ability to store energy efficiently.[1–4]

Nickel oxide (NiO), a p-type semiconductor, stands out among metal oxides due to its excellent thermal stability, environmental safety, and moderate cost. These attributes make NiO suitable for applications in supercapacitors, batteries, and other energy storage systems. However, its moderate dielectric constant, low electrical conductivity, and susceptibility to structural defects limit its performance in high-efficiency energy storage applications.[5–7] Understanding the fundamental properties of NiO is essential to address these issues and unlock its full potential.

To enhance the properties of NiO, researchers have explored doping strategies that modify its structure and improve its dielectric performance. The inclusion of suitable dopants can enhance the material's dielectric constant and reduce defects, thereby improving its functionality. Barium oxide (BaO), with its larger ionic radius, can introduce lattice distortions and enhance polarization properties, making it a promising dopant for NiO.[8–11] However, the effects of BaO doping on NiO remain insufficiently explored, leaving a gap in understanding its influence on the material's structural and electrical properties.[12–15]

The synthesis of pure and doped NiO can be achieved through various methods, including sol-gel processing, hydrothermal synthesis, and solid-state reactions.[6,8] Among these, the co-precipitation method offers significant advantages, such as uniform particle distribution, precise dopant incorporation, and consistent morphology while minimizing structural imperfections.[16–18] Compared to other techniques, co-precipitation is cost-effective, scalable, and well-suited for preparing high-quality materials for advanced applications.

In the present study, we systematically investigated the structural and electrical properties of BaO-doped NiO and pure NiO synthesized using the co-precipitation method. By employing detailed characterization techniques, we aim to elucidate the impact of BaO doping on the performance of NiO. The findings of this work highlight the potential of BaO-doped NiO as an enhanced material for energy storage applications, contributing valuable insights into the development of next-generation materials.[19,20]

Experimental

Materials and reagents.—For the synthesis, nickel acetate tetrahydrate Ni $(C_2H_3O_2)_2{\cdot}4H_2O$ and barium chloride dihydrate $(BaCl_2{\cdot}2H_2O)$ of analytical grade were used. Sodium hydroxide (NaOH) of reagent grade was utilized as the precipitation agent. All chemicals were used as received, without further purification, to maintain the integrity and simplicity of the experiment.

Synthesis of pure and BaO-NiO.—To prepare the solutions, 1 M $Ni(C_2H_3O_2)_2{\cdot}4H_2O$ and 4 M NaOH were separately dissolved in distilled water. The molar ratio of $Ni(C_2H_3O_2)_2{\cdot}4H_2O$ to NaOH was set at 1:4. The NaOH solution was gradually added to the $Ni(C_2H_3O_2)_2{\cdot}4H_2O$ solution while stirring continuously with a magnetic stirrer on a hot plate to ensure uniform precipitation of nickel hydroxide. After precipitation, the resulting product was filtered, washed thoroughly with distilled water and ethanol to remove impurities and reduce particle agglomeration, and then dried in an oven at 90 °C for 3 h.The dried material was then calcined at 800 °C for 2 h to obtain pure nickel oxide (NiO).

For the synthesis of BaO-doped NiO (5% BaO), the same procedure was followed with the addition of $BaCl_2{\cdot}2H_2O$ as the barium precursor. The required amount of $BaCl_2{\cdot}2H_2O$ was dissolved in distilled water and added to the $Ni(C_2H_3O_2)_2{\cdot}4H_2O$ solution before precipitation. This ensured homogeneous distribution of Ba^{2+} ions within the NiO matrix. During calcination at 800 °C, $BaCl_2{\cdot}2H_2O$ decomposed, leading to the in situ formation of BaO within the NiO lattice.

The synthesized samples were characterized for their phase, morphology, optical, and dielectric properties using various

[=]Equal Contribution.
[z]E-mail: baburaja46@gmail.com

ScienceDirect

Ceramics International

Volume 51, Issue 15, June 2025, Pages 20620-20627

Comparative study of electrochemical supercapacitor performance Among various nickel phases: Hydroxide, oxide, and sulfide

Sreenivasa Kumar Godlaveeti [a], Adel El-marghany [b], Ramamanohar Reddy Nagireddy [c], Sreedevi Gedi [d], Rajababu Chintaparty [e]

Show more

Share Cite

https://doi.org/10.1016/j.ceramint.2025.02.229

Get rights and content

Abstract

The unique electrochemical properties of metal sulfides have made them highly attractive for use in supercapacitor technologies. This study focuses on the electrochemical behaviour of nickel-based materials namely nickel hydroxide (β-$Ni(OH)_2$), nickel oxide (NiO), and nickel sulfide (NiS) synthesized via a simple hydrothermal approach. Structural analysis was performed using X-ray diffraction (XRD), while field emission scanning electron microscopy (FE-SEM), field emission transmission electron microscopy (FE-TEM) and energy-dispersive X-ray spectroscopy (EDAX) provided insights into the morphology and elemental composition of each material. The surface area, pore volume and pore diameter were calculated from Brunauer Emmett Teller (BET) instrument. The electrochemical performance of these synthesized compounds was tested in supercapacitor applications through cyclic voltammetry (CV), galvanostatic charge-discharge (GCD), electrochemical impedance spectroscopy (EIS) and stability performance in a three-electrode system. Notably, NiS outperformed other nickel phases, achieving a specific capacitance of approximately 1066F/g at a current density of 5 A/g in a 3M KOH electrolyte. The findings highlight the potential advantages of metal sulfides over metal oxides and hydroxides in supercapacitor applications,

Vol. XVIII & Issue No. 02 February 2025
INDUSTRIAL ENGINEERING JOURNAL

A RANDOMIZED APPROACH COMBINING Q AND KRYLOV SUBSPACE METHODS FOR NONSYMMETRIC LINEAR SYSTEMS

VIJAY KUMAR H
ASHISH K
C SRINIVASULU

Abstract

The most popular iterative methods for solving nonsymmetric linear systems are Krylov methods. Recently, an optimal Quasi-ORthogonal (Q-OR) method was introduced, which yields the same residual norms as the Generalized Minimum Residual (GMRES) method, provided GMRES is not stagnating. In this paper, we study how to introduce matrix sketching in this algorithm. It allows us to reduce the dimension of the problem in one of the main steps of the algorithm

Keywords: linear systems; Krylov methods; Q-OR algorithm; randomization; matrix sketching

1.Introduction

Let A be a real nonsingular nonsymmetric matrix of order n. So far, the most popular iterative methods for solving a nonsymmetric linear system Ax = b, where b is a given real vector, are Krylov methods. Many of them can be classified as Quasi-ORthogonal (Q-OR) methods or Quasi-Minimal Residual (Q-MR) methods (see, for instance, [1]). All these methods use the same framework but differ by the basis which is chosen. Different possibilities for computing the basis are described in [1] (Chapter 4). Well-known examples of Krylov methods are FOM [2,3] and GMRES [4], which use an orthonormal basis. In [5], a Q-OR optimal method that minimizes the residual norm using a non-orthogonal basis was proposed. In most cases, it must give the same residual norms as GMRES, which also minimizes the residual norm, but uses an orthonormal basis computed with the Arnoldi process (see [4]).

In recent years, randomization techniques have been proposed to reduce the dimension of some problems in numerical linear algebra (see [6–8]). In this paper, we study how to introduce randomization and matrix sketching in the Q-OR optimal algorithm. Sketching is used to solve a least squares subproblem that must be solved at each iteration.

Section 2 recalls the Q-OR optimal method [1,5]. In Section 3, we describe some known techniques for matrix sketching. Section 4 shows how to use these techniques in the Q-OR optimal method. This is illustrated by a few numerical experiments described in Section 5, showing that, even though some monotonicity properties are lost, convergence is preserved for the randomized algorithm.

2.The Q-OR Optimal Method

Let r0 = b − Ax0 be the initial residual vector. Let us assume that we have an ascending basis of the nested Krylov subspaces Kk(A, r0), which are defined as

Kk(A, r0) = span{r0, Ar0, A2r0, . . . , Ak−1r0}, k = 1, 2, .

The dimension of these subspaces rises to kmax ≤ n, known as the grade of A with respect to r0. This means that, if v1, . . . , v are the basis vectors of Kk(A, r0), then v1, . . . , vk, vk+1 are the basis vectors for Kk+1(A, r0) as long as k + 1 ≤ kmax.

Such basis vectors satisfy what is called an Arnoldi relation,

AVk = Vk Hk + hk+1,kvk+1eT = Vk+1 Hk, (1)

where Hk is an upper Hessenberg matrix with entries hi,j, the columns of Vk are the basis vectors v1, . . . , vk, and ek is the last column of the identity matrix of order k. The matrix Hk is Hk, appended at the bottom with a k + 1st row equal to hk+1,keT .

The iterates xk, k ≥ 1 in Q-OR and Q-MR methods are sought as

xk = x0 + Vkyk, (2)

for some unique vector yk ∈ □k. Since we choose v1 = r0/ r0 , the residual vector rk, defined as rk = b − Axk, is

rk = b − Axk
= b − Ax0 − AVkyk
= r0 Vke1 − AVkyk
= Vk(r0 e1 − Hkyk) − hk+1,k[yk]kvk+1. (3)

In a Q-OR method, the kth iterate xO is defined (provided that Hk is nonsingular) by computing yk = yO in (2) as the solution of the linear system

Hkyk = r0 e1. (4)

This annihilates the term within the parentheses on the right side of (3). The iterates of the Q-OR method are xO = x0 + r0 Vk H−1e1, the residual vector rO is proportional to

k k kvk+1, and

O = h [yO] . (5)

In the case where Hk is singular and xO is not defined, we define the residual norm as

being infinite, rO = ∞.

The residual vector in relation (3) can also be written as rk = Vk+1(r0 e1 − Hkyk). (6)

Instead of removing the term within the parentheses on the right side of (3), we would like to minimize the norm of the residual itself. This is what is carried out in GMRES with an orthonormal basis [4]. Minimizing the norm of the residual may seem as costly when the columns of the matrix Vk+1 are not

Indian Journal of Chemical Technology
Vol. 31, July 2024, pp. 593-603
DOI: 10.56042/ijct.v31i4. 7530

Computational analysis for magnetized radiative Jeffrey nanofluid ($Au/C_2H_6O_2$) flow in a rotating system with activation energy

K. Kumaraswamy Naidu[1], D. Harish Babu[2], P.V. Satya Narayana[3]*, S. Harinath Reddy[4] & A.M. Rashad[5]

[1]Dept. of Mathematics, Mohan Babu University (Erstwhile Sree Vidyanikethan Engg. Coll.), Tirupati-517 102, A.P, India

[2]Dept. of Mathematics, SASL, VIT Bhopal University, Bhopal-466114, M P, India

[3]Dept. of Mathematics, SAS, Vellore Institute of Technology, Vellore – 632 014, T.N, India

[4]Dept. of Mathematics, Annamacharya Inst. of Tech. and Sci., Rajampet, A.P, India

[5]Department of Mathematics, Aswan University, Faculty of Science, Aswan, 81528, Egypt

*E-mail: pvsatya8@yahoo.co.in

Received 24 December 2023; accepted 27 May 2024

The current paper is aimed at investigating the impact of Arrhenius energy and thermal radiation on a Jeffrey nanoliquid using the Tiwari-Das model within a rotating porous system. The study includes *Au*, (Gold) as a nanoparticle, and ethylene glycol (EG) as a base fluid. The leading partial differential equations describing the flow are formulated based on the general laws of momentum, energy and species concentrations. The applicable dimensionless configuration reduces the complexity of the flow model, allowing it to be solved numerically. The Runge-Kutte Fehlberg scheme, in concert with MATLAB, is used to solve the transformed equations. Multiple graphs and tables are used to examine the new results comprehensively regarding fundamental flow, magnetic, and thermal properties for various implanted parameters. It is observed that the concentration profile seems higher for progressive values of Arrhenius energy, whereas the opposite behaviour has been observed for greater values of the Schmidt number and chemical reaction parameter. The findings from this research can be applied to the development of many technologies such as solar power plants, nanofluidic devices, micro pumps, etc.

Keywords: Activation energy, Chemical reaction, Jeffrey fluid, Rotating system, Thermal radiation, Tiwari-Das nanofluid model

Introduction

Recent advances in technology have been greatly influenced by nanoparticles, particularly in their capacity to facilitate the transport of mass and heat. In view of this, nanoliquids are considered. However, nanofluids are a subclass of liquid composed of particles measuring between 1 and 100 nm. The colloidal particles of nanomaterial (*Au)* are suspended in the base fluid Ethylene Glycol (EG). Several academics have expressed an interest in learning the flow of these nanoliquids across varied geometries under the impact of a variety of variables. It has already been demonstrated that including nanoparticles in the fluids used in solar processes can significantly increase the efficiency of those processes, which in turn makes them the most effective. In cooling and heating applications, nanofluids frequently play a crucial role. Poply and Vinita[1] conducted research to determine how the results of thermal flux and heat production affect the heat transmission rate of a nanoliquid over a stretched cylinder. Sheikholeslami and Ganji[2] studied the effect of thermal conduction using a two-phase nanoliquid model in a rotating system. They reported that the temperature boundary layer becomes thicker as the Brownian motion and thermophoresis parameters increase. Rashidi *et al.*[3] looked at how the second law of thermodynamics applies to the motion of a nanoliquid that is both electrically conductive and incompressible over a porous, spinning disc. They concluded that magnetic spinning disc drives could have major consequences for improving heat transfer in renewable energy systems. Non-Newtonian nanofluids flowing through a conduit are addressed by Ellahi[4]. They considered two thermal viscosity models. Even with a wide range of viscosities, he found that fluid motion is slowed by the MHD parameter. Ali *et al.*[5] discussed the heat and mass transfer of a nanoliquid inside deformed parallel walls. Santhosh and Sivaraj[6] analysed the impact of

Contents lists available at ScienceDirect

Case Studies in Thermal Engineering

journal homepage: www.elsevier.com/locate/csite

Numerical and neural network approaches to heat transfer flow in MHD dissipative ternary fluid through Darcy-Forchheimer permeable channel

D Harish Babu [a,*], K Kumaraswamy Naidu [b], B Hari Babu [c], K Venkateswara Raju [d], S Harinath Reddy [e], P.V Satya Narayana [f]

[a] Dept. of Mathematics, SASL, VIT Bhopal University, Bhopal, 466114, M P, India
[b] Dept. of Mathematics, Mohan Babu University (Erstwhile Sree Vidyanikethan Eng. Coll.), Tirupati, 517 102, A.P, India
[c] Dept. of Mathematics, PACE Inst. of Tech. & Sci, Ongole, 523272, A.P, India
[d] Dept. of Mathematics, Sri Venkateswara Coll. of Eng.(Autonomous), Tirupati, A.P, India
[e] Dept. of Mathematics, Annamacharya Inst. of Tech. and Sci., Rajampet, A.P, India
[f] Dept. of Mathematics, SAS, Vellore Inst. of Tech., Vellore, 632 014, T.N, India

ARTICLE INFO

Handling Editor: Huihe Qiu

Keywords:
Darcy-Forchheimer
Ternary hybrid nanofluids
Convection
Joule heating
Viscous dissipation
Artificial neural network

ABSTRACT

The study of heat transfer in fluid flows across permeable media is critical in many engineering applications, including energy systems, cooling technologies, and chemical processes. This study aims to explore the impact of joule heating and heat transfer flow of an MHD dissipative ternary fluid through a channel embedded in a Darcy-Forchheimer permeable medium. Additionally, the utilization of ternary hybrid nanofluids, composed of a base fluid and three nanoparticles Al_2O_3, MoS_2, and Cu has emerged as a promising avenue for augmenting thermal conductivity and heat transfer rates. The governing equations are transformed into a set of coupled ordinary differential equations by employing similarity variables and simplified by bvp4c and artificial neural network (ANN) model approaches. Results reveal that significant enhancement in the velocity field at the lower channel wall and reductions at the upper wall, while fluid temperature decreases with increasing Prandtl number. Further, the heat transfer rate increases with an increase in the Prandtl number and magnetic field whereas the skin friction decays with an increase in the magnetic field. Meanwhile, the comparison was carried out for the temperature field by using bvp4c & ANN and the results are strongly correlated.

1. Introduction

The study of fluid flow within channels intrigues both researchers and engineers, owing to its ubiquitous occurrence in a wide array of natural and human-made systems [1–7]. The examination of channel flow yields invaluable insights with profound implications that involve refining the efficiency of hydraulic structures, crafting transportation systems, and comprehending environmental phenomena such as river dynamics. Joule heating in fluid flow is the generation of heat inside the fluid caused by electrical resistance when an electric current flows through it. When an electric current passes through a conductive fluid like a metal or an electrolyte solution, the fluid's resistance to the flow of electricity results in the conversion of electrical energy into thermal energy, causing the fluid's

* Corresponding author.
E-mail address: harish225babu@gmail.com (D. Harish Babu).

https://doi.org/10.1016/j.csite.2024.104777
Received 14 April 2024; Received in revised form 7 June 2024; Accepted 29 June 2024
Available online 1 July 2024
2214-157X/© 2024 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC license (http://creativecommons.org/licenses/by-nc/4.0/).

Communications on Applied Nonlinear Analysis
ISSN: 1074-133X
Vol 32 No. 3 (2025)

Chemical Reaction and Soret Effects on Mhd Free Convection Flow Past an Accelerated Vertical Plate Through a Porous Medium with Heat Source

Y. V. Seshagiri Rao[1], Dr. Y. Satheesh Kumar Reddy[2], Dr. V. Vishnuvardhan[3], D. Chenna Kesavaiah[4*], Dr. D. Raju[5]

[1]Department of Humanities and Sciences, Guru Nanak Institute of Technology (Autonomous), Ibrahimpatnam, Hyderabad, Telangana-501506, India, Email: yangalav@gmail.com
[2]Associate Professor, Department of Humanities and Sciences, K. S. R. M. College of Engineering (Autonomous), Kadapa- 516 005, Andhra Pradesh, India
[3]Assistant Professor, Department of Humanities and Sciences, Annamacharya University, Rajampet - 516 126, Annamayya (Dist), Andhra Pradesh, India, Email: vishnuvardhan36369@gmail.com
[4]Department of Basic Sciences & Humanities, Vignan's Institute of Management and Technology for Women (Autonomous), Kondapur (V), Ghatkesar (M), Medchal-Malkajgiri (Dist), Telangana-501301, India
[5]Associate Professor, Department of Science & Humanities , J. B. Institute of Engineering and Technology (Autonomous), Yenkapally (V), Moinabad (M), R. R. Dist (Dist), Telangana-500075, India
Email: 20122102india@gmail.com

*Corresponding author: chennakesavaiah@gmail.com

Article History:
Received: 02-12-2024
Revised : 05-02-2025
Accepted: 10-03-2025

Abstract:

The investigation of the effects of Hall current, rotation, and the Soret effect on the unsteady Magnetohydrodynamics (MHD) free convection heat and mass transfer flow of a viscous, incompressible, and electrically conducting fluid past an infinite vertical plate embedded in a porous medium. This type of problem typically involves several complex physical phenomena, so breaking it down in steps will help in understanding the dynamics and solving the governing equations by using perturbation technique.

Key words: *Chemical reaction, Soret effect, MHD, Accelerated vertical plate*

Introduction

The interplay between diffusion and chemical reaction rates in various processes is indeed crucial for understanding many practical applications, particularly when both processes occur at comparable speeds. In such cases, the reaction dynamics are influenced not just by the chemical properties of the system but also by how the reactants diffuse toward each other and the product. The technique of thermal diffusion has been used for isotope separation, particularly in gas mixtures with very light molecules like hydrogen and helium. The principle behind this process is that lighter molecules (like hydrogen) tend to diffuse faster than heavier ones (like helium), and when subjected to a temperature gradient, this difference in diffusion rates can be exploited to separate the two isotopes or gases. This phenomenon is essential in industries requiring isotope enrichment, such as nuclear power, medicine (for radioactive tracers), or scientific research. The fine balance between diffusion and temperature gradients is key in optimizing the efficiency of this separation process. The study of diffusion and chemical reaction rates, particularly when they are of comparable speeds, plays a vital role in many physical processes, from industrial applications (like cooling systems for electronics) to more specialized processes (such as isotope separation). The interaction between diffusion and kinetics can lead to complex behaviours that are essential for optimizing efficiency and ensuring the stability of the system [1-12].

Vol. XVII & Issue No. 12 December 2024
INDUSTRIAL ENGINEERING JOURNAL

OPTIMISING THE DECARBOXYLATION OF ANACARDIC ACID BY EXPLORING THE TEMPERATURE EFFECTS

Dr. ANOOP R MARKANDE
Dr. MOULIKA BHATTACHARYYA
JANAGAMSETTY SIVAKRISHNA

Abstract

Cashew nut shell liquid (CNSL) is one of the raw materials extracted from cashew nut shells (CNS). This liquid can be processed to produce cardanol through the decarboxylation of anacardic acid, a significant isolate from CNSL. The decarboxylation process involves heating anacardic acid to a favourable reaction temperature. This study investigated the ideal temperature required for this process. Fourier-transform infrared (FTIR) spectroscopy characterised CNSL and cardanol isolates. Anacardic acid was separated, purified and heated to temperatures ranging from 140°C to 152°C after being isolated from CNSL. At each temperature, the decarboxylation yield was calculated. The results indicated that a temperature of 145°C is optimal for the decarboxylation of anacardic acid at standard pressure, with a maximum yield of 66% observed. These findings contrast with other studies, which suggested optimal temperatures of 140°C and 180°C–200°C for the decarboxylation of anacardic acid. The main advantage of the identified temperature in the anacardic acid decarboxylation reaction is the increased yield and overall process efficiency by promoting the synthesis of desired products over potential side reactions (selectivity). Furthermore, reactions at lower temperatures can be more energy-efficient than those at higher temperatures, thus reducing costs in industrial processes. Lastly, it is generally safer to work with lower temperatures, as there is a reduced risk of thermal degradation and thermal runaway reactions

Keywords: anacardic acid; cardanol; cashew nut shell liquid; decarboxylation temperature

Agricultural wastes and by-products are the most adaptable bio-based renewable materials, especially in the search for functional materials and chemicals derived from renewable resources. Accordingly, cashew nut shells (Anacardium occidentale) are typical agricultural by-products of cashew nut processing that produce a versatile liquid known as cashew nut shell liquid (CNSL). This dark brown, viscous liquid is found inside the honeycomb structure of the cashew nut shell [1]. CNSL comprises phenolic compounds (ana- cardic acid, cardanol, cardol and methyl cardol) with a long unsaturated C15 chain substitution at the meta position. The functional groups in these natural lipids, including alkene, phenol and carboxylic acid, allow for the conversion of the constituents of CNSL into a variety of substances, and speciality chemicals [2]. CNSL has versatile uses, including forming special polymers such as fire retardant polymers, resin synthesis, additives and varnishing agents [3]. CNSL consists of four major phenolic components (Figure 1): anacardic acid, cardanol, cardol and 2-methyl cardol. The composition of these constituents depends on the method of extraction, whether natural (cold extraction) or technical (hot extrac- tion). The natural CNSL contains anacardic acid (46%– 70%), cardanol (5%–22%), cardol (15%–31%) and a trace amount of methyl cardol and polymeric materials. The technical CNSL encompasses (1%-2%) anacardic acid, (60%–95%) cardanol, (4%–19%) cardol, (1.2%–4.1%) 2- methyl cardol and a trace of polymeric materials. Moreover, phenolic groups in these compounds enable change through esterification processes and interactions with aldehydes such as formaldehyde [1]. Scientists have established that CNSL is a naturally occurring, affordable and renewable source of phenolic compounds, exhibiting adhesive qualities [6]. Among the four components, car- danol is the most adaptable bio-based renewable material that can replace phenol in its reaction with equal or superior performance to phenol [4]. Cardanol's presence of a phenolic hydroxyl group in its structure led to its adoption as a replacement for phenol in phenolic-based adhesives [3, 7]. Furthermore, compared to other phenolic compounds, cardanol has been used industrially without causing contamination since it has a low volatilisation rate, a high boiling point and no objectionable aroma [6]. The synthesis of cardanol relies on the decarboxylation reaction of anaat the Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha, Tanzania.

2.2.Extraction of CNSL. The CNS (Figure 2(a)) was ground into powder using a spice and herb grinder (Figure 2(b)). The pulverised cashew shells (Figure 2(c)) were soaked in acetone at a 1 : 4 ratio for 4 days while shaken on an orbital shaker set to 200 rpm. On the fourth day, the mixture was vacuum-filtered to yield a liquid and a filtrate. Since acetone has a low boiling point (56.04°C) compared to the content of CNSL, it was removed from the coloured liquid under re- duced pressure using a rotary evaporator [9]. Pure CNSL was obtained as a dark-brown, viscous liquid (Figure 2(d)). The percentage yield of the CNSL was then calculated using equation (1), as proposed by Kyei et al. [10]. cardic acid. It has been reported that this reaction occurs at a temperature between 180°C and 200°C [5, 6, 8]. On the flip side, few studies have reported that it appears at 140°C for 1 h [4]. A comparison of the reported temperature values indicates that the variation is significant; hence, exploring the effects of temperature on the decarboxylation of anacardic acid is an exciting research topic. Therefore, this study aimed to isolate cardanol from anacardic acid through a decarboxylation

Vol. XVIII & Issue No. 02 February 2025
INDUSTRIAL ENGINEERING JOURNAL

EXPLORING NETWORK STABILITY THROUGH DOMINATION AND SIGN DOMINATION METRICS IN GRAPH THEORY

BS. PATIL
B. VAHIDA RAHIMAN BHANU

Abstract

This research explores the intricate relationship between domination numbers and sign domination numbers in the context of network stability through a graph-theoretic lens, focusing on the conceptual interplay of these parameters as critical measures of influence, resilience, and resource optimization in network structures, where the domination number—a fundamental parameter in graph theory—quantifies the minimum number of vertices required to dominate all other vertices in a graph, while the sign domination number extends this concept by incorporating signed functions to refine the notion of domination in graphs with weighted or directed edges, and investigates how these parameters influence the robustness and fault- tolerance of networks, particularly in systems modeled as social, biological, or communication networks, highlighting that lower domination numbers often signify optimal resource allocation and control in static graphs while higher sign domination numbers can indicate greater flexibility in adapting to dynamic environments, with theoretical frameworks analyzing variations in these metrics across gr[illegible] classes such as bipartite graphs, planar graphs, and dense graphs, and presenting new bounds, inequalities, and characterizations [illegible] domination and sign domination numbers in diverse topological settings; furthermore, the study delves into the role of graph transformations including edge additions, vertex removals, and subgraph operations—on the stability of these parameters, revealing how structural perturbations impact network resilience, particularly in minimizing vulnerabilities caused by cascading failures or targeted attacks, and demonstrates through theoretical modeling how sign domination numbers, with their nuanced approach to assigning signed functions, provide a more flexible and adaptive framework for evaluating network stability in weighted and dynamic graphs compared to traditional domination numbers, offering insights into optimizing control, coverage, and influence in practical applications such as communication protocols, epidemic containment strategies, and sensor network designs, while also presenting open problems and conjectures for future research in extending the comparative analysis of domination and sign domination numbers to hypergraphs, multi- layered graphs, and time-evolving networks, ultimately contributing to a deeper theoretical understanding of how these graph-theoretic parameters govern the stability, adaptability, and efficiency of complex network systems under varying structural and functional constraints, thereby paving the way for innovative solutions in the design and analysis of resilient and efficient networks.

Keywords: :Domination Number, Sign Domination Number, Network Stability, Graph Theory, Network Resilience, Graph Transformations

INTRODUCTION

In graph theory, the domination number of a graph GGG is the minimum number of vertices in a dominating set, where a dominating set is a subset of vertices such that every vertex not in the set is adjacent to at least one vertex in the set. This concept is fundamental in understanding various properties of graphs, including network stability and resilience (Haynes et al., 1998). The sign domination number extends this concept by assigning a function f: V(G)→{−1,1} f: V(G) \rightarrow \{-1, 1\}f:V(G)→{−1,1} to the vertices of the graph, with the condition that the sum of function values over any closed neighborhood is at least one. This parameter provides a more nuanced measure of control within a network, especially in contexts where interactions can have positive or negative influences (Harary, 1994). Understanding the interplay between domination numbers and sign domination numbers is crucial for analyzing network stability. Networks with lower domination numbers typically require fewer resources to maintain control, indicating higher efficiency. Conversely, networks with higher sign domination numbers may ex[illegible] greater flexibility in adapting to dynamic changes, as the sign assignments can model complex interactions more accurately (Aharoni & Ziv, 2017). Recent studies have explored these parameters in various graph classes. For instance, the domination number for specific graphs like the helm graph HnH_nHn and web graph WnW_nWn has been established, providing insights into their structural properties (Chang et al., 2005). Additionally, the concept of equitable domination, which considers uniform distribution of control across a network, has been introduced to address fairness in resource allocation (Wang & Yu, 2016). Theoretical advancements have also been made in understanding the effects of graph operations on domination numbers. Operations such as edge addition or vertex removal can significantly impact the domination number, thereby affecting network stability. A comprehensive survey on this topic provides a deeper understanding of how structural modifications influence domination parameters (Cockayne &

Energy Storage Optimization in Electric Vehicles for improving vehicles to grid Performance

Mary Jasmin Nerella[1], J. Venkatesh[2], Rajesh Kumar[3], Arul Johnson. A[4], R.Ramaswamy[5*], S. Mohammed Ghouse[6]

[1]Computer Science and System Engineering, Andhra University College of Engineering(A), visakhapatnam, Andhra Pradesh
[2]Department of Mechanical Engineering, Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu.
[3]Department of Mechanical Engineering, CVR College of Engineering, Hyderabad, Telangana.
[4]Department of Mechanical Engineering, PSNA College of Engineering and Technology, Dindigul, Tamilnadu.
[5]Department of Mechanical Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, Telangana.
[6]Department of Chemistry, Annamacharya University, Rajampeta - 516 126, Andhra Pradesh, India.

Abstract: Electric vehicles are one of the key factors through which integration into modern energy systems brings an opportunity for improved grid stability, foster usage of renewable energy, and effective energy usage. The significance of V2G technology is to make possible a bidirectional flow of power from which the vehicle derives power for charging and returns it to the grid when it has some excess. This innovation supports peak shaving, load balancing, and renewable energy integration and will be contributing to the optimisation of the grid. Improvement in the charging methods of EVs are AC, DC fast charging, and wireless systems further increasing the convenience and efficiency in adopting EVs. Standardization is necessary to ensure compatibility and interoperability across the EV ecosystem. Grid integration standards provide uniformity and specifications for communication protocols, safety standards, energy management, and interactions with infrastructures and utility grids coming from Electric Vehicles. This abstract emphasize the synergy between V2G technology, innovative charging methods, standardization efforts, and optimization strategies driving the development of electrified transportation and smart grids.

1 Introduction

Battery Electric Vehicles play a vital role in the sustainability challenges involving global warming, fossil fuel depletion, and greenhouse gases [1]. They have zero emission, high efficiency, less maintenance than other fuels with the help of regenerative braking, and hence, are environment-friendly products. They could support the de-carbonising of transport and electricity supply that have possibilities for emission reductions and flexibility in energy

* Corresponding Author: ram4mgriet@gmail.com

© The Authors, published by EDP Sciences. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

Discover Sustainability

Review

A comprehensive review on agricultural waste production and onsite management with circular economy opportunities

M. Mallikarjuna Rao[1] · Sathish Mohan Botsa[2] · T. Prabhakara Rao[3] · Srinivasa Rao Goddu[4] · C. Vijayasanthi[5]

Received: 26 May 2024 / Accepted: 9 September 2024
Published online: 27 September 2024
© The Author(s) 2024 OPEN

Abstract
Farming is the primary source of livelihood in India. A variety of crops (cereals, fibers, oil seeds, sugarcane, and others) are grown for food and other consumable products. This results in the production of a large amount of agricultural waste, also known as crop residue. The disposal of crop residue is a major problem in India. Farmers often burn it in open fields (in-situ burning) due to a lack of farmer-friendly options. This has led to increased air pollution in the Indo-Gangetic plains, the loss of beneficial soil microbes and nutrients, and other health risks. This review paper discusses the current status of agricultural residual production in India. It examines waste-to-energy production technologies and assesses the potential for second-generation fuel production in the country. The paper also discusses in-situ management practices (such as happy seeder, rotary mulcher, shrub master, and paddy straw chopper/shredder) and ex-situ energy recovery technologies (such as biogas, biochar, bioethanol plants, and vermicomposting) for sustainable energy production.

Highlights

- This review focused on Agricultural waste generation.
- Majorly focused on the current status of agricultural residue production.
- Discussed waste to energy production technologies.
- It evaluated the second-generation fuels production possibilities in the country.

Keywords Crop residue burning · Environmental pollution · Second-generation fuels · In-situ management

1 Introduction

Agricultural residue burning is a prevalent practice in many regions, particularly in the Indo-Gangetic plains of India, where it significantly impacts air quality, soil health, and human well-being. This review paper synthesizes current knowledge on the environmental and health effects of crop residue burning, highlighting the urgent need for sustainable management practices. The frequent in-situ burning of residues, especially rice and wheat, releases

✉ Sathish Mohan Botsa, bsathish401@gmail.com | [1]PACE Institute of Technology and Sciences, Ongole, Andhra Pradesh 523272, India. [2]Bio Enviro Chemical Solutions Pvt Ltd., Visakhapatnam 530017, India. [3]Department of Applied Engineering, Vignan's Foundation of Science Technology and Research, Vadlamudi, Guntur, Andhra Pradesh 522213, India. [4]Department of Geophysics, Andhra University, Visakhapatnam 530003, India. [5]Department of Humanities and Sciences, Annamacharya Institute of Technology and Sciences, Kadapa District, Rajampeta 516126, India.

INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY
Monthly Peer-Reviewed, Refereed, Indexed Journal
Volume - 9, Issue - 1, January - 2025

ISSN(O): 2456-6683
[Impact Factor: 9.241]

IJRCS

DOIs:10.2017/IJRCS/202501006 --:-- Research Paper / Article / Review

The Role of Organic Chemistry in E-Waste Management Systems: Innovations, Challenges, and Opportunities

C Vijaya Shanthi
Assistant Professor,
Department of Humanities & Sciences, Annamacharya University,
Rajampet, Annamayya District, Andhra Pradesh, India.
Email – santhic812@gmail.com

Abstract: *The growing generation of electronic waste (e-waste) poses a significant challenge to environmental sustainability, human health, and resource conservation. E-waste contains various hazardous materials such as heavy metals, plastics, and toxic chemicals. Among these chemicals, organic compounds both synthetic and naturally occurring play an important role in the composition of electronic devices and the recycling processes. The application of organic chemistry in e-waste management has the potential to offer sustainable solutions in the extraction, recycling, and treatment of these materials. This review explores the intersection between organic chemistry and e-waste management, discussing the role of organic compounds in electronics, their environmental impacts, and the opportunities for improving recycling technologies. Additionally, it delves into innovative approaches for utilizing organic chemistry in developing eco-friendly materials for electronic devices and more efficient methods of e-waste recycling.*

Key Words: *E-Waste, Organic Compounds, Sustainable Solutions, Innovative Approaches.*

INTRODUCTION:

Electronic waste (e-waste) is one of the fastest-growing waste streams globally. The rapid pace of technological advancements and increasing consumption of electronic devices contribute to the rising volumes of discarded electronics. E-waste contains a mixture of organic and inorganic compounds, including plastics, metals, and various chemical additives. Organic chemistry plays a crucial role in understanding and managing the toxicological and chemical components found in e-waste. Organic compounds such as flame retardants, polymers, adhesives, and plasticizers are used extensively in electronic products. Proper management of these substances is essential for reducing the environmental and health risks associated with e-waste disposal. This paper explores the role of organic chemistry in e-waste management systems, focusing on the chemical composition of e-waste, its environmental impact, and the emerging technologies and innovations in recycling and disposal. Additionally, it discusses sustainable alternatives to organic compounds commonly found in e-waste.

CHEMICAL COMPOSITION OF E-WASTE: THE ROLE OF ORGANIC COMPOUNDS:

Organic Materials in Electronics:

Modern electronic devices, including smartphones, laptops, televisions, and circuit boards, contain numerous organic compounds. These materials play critical roles in the device's function, performance, and durability. Key organic components in e-waste include:

- **Polymers and Plastics**: Many electronic devices contain polymers such as polyethylene, polycarbonate, and polystyrene, which are used for insulation, casing, and components. These plastics often pose challenges in recycling because they degrade at high temperatures and may release toxic chemicals when burned or improperly disposed of.
- **Flame Retardants**: Organic flame retardants (such as brominated or chlorinated compounds) are widely used to enhance the fire safety of electronic devices. These compounds, while effective in preventing fires, are often toxic and persistent in the environment, causing concerns regarding their environmental impact.
- **Adhesives and Sealants**: Organic adhesives and sealants used in electronics for bonding and protecting components may contain harmful chemicals like bisphenol-A (BPA), phthalates, and other volatile organic compounds (VOCs), which can leach out during improper disposal.

Vol. XVII & Issue No. 10 October - 2024
INDUSTRIAL ENGINEERING JOURNAL

AN OVERVIEW OF CURRENT DEVELOPMENTS AND VIEWPOINTS ON BACTERIAL BIOFLOCCULANTS

S.Reshma

Abstract

Because of its exceptional flocculating activity and biodegradability to provide a clean and healthy environment, the culture of bioflocculants has garnered a lot of interest lately. The development of innovative, economically viable bioflocculants from renewable resources becomes imperative. These bioflocculants' cell walls contain enough lipids and carbohydrates to support a variety of environmental uses, including CO2 sequestration, wastewater treatment, and the manufacture of biofuels. Most people believe that there is still uncertainty about the viability of using bioflocculants for energy security. The creation and characterisation of bioflocculants, along with their important uses in a variety of industries, such as the treatment of water and wastewater, are covered in this article. In addition to serving as substitutes for clarifying agents, these bioflocculants are involved in creative in diverse fields including treatment of water and wastewater(s). These bioflocculants not only act as alternatives to clarifying agents but also figure in innovative.

Keywords- Bioflocculants; flocculating activity; cultivation conditions; wastewater treatment and environmental applications

1. INTRODUCTION

1.1.Bacterial bioflocculants

Water pollution caused by organic and inorganic pollutants has become an important concern of this era [1]. Many hazardous inorganic and organic pollutants, including textile industries dyes and derivatives of phenols released from various industries have become a worldwide problem [2-8]. Textile industries are considered as one of the biggest sources of water pollution due to the utilization of different chemicals during textile processing. The unused effluents from the processes are discharged as wastewater that contains turbidity, colour, high level of toxic chemicals, biochemical oxygen demand (BOD) and chemical oxygen demand (COD). These industrial discharges if released to sea, river and/or lakes without proper treatment, badly affect the environment [9, 10]. Therefore, it becomes a difficult but necessary task to treat and remove the pollutants present in water bodies. For the treatment of industrial effluents a numbers of methods and materials (e.g. Electrocoagulation, constructed wetlands, hybrid ion exchange materials, and membrane filtration, activated carbon, etc.) have been used [11-19] All these treatments technologies are playing significant role in the management of industrial effluents. However, the main drawbacks of these methods are either they are more expensive or produce massive amounts of sludge. Treatment of industrial discharges has also been carried out using composite materials which provided significant recoveries of heavy metal ions (up to 97-98 % yield) [20-24]. However, the exhausted composite material cannot be further used by applying any method to remove adsorbed metal ion on it. Desorption of metal ions from the surface of hybrid materials is an expensive and time consuming procedure. After re-using these materials once more there is the problem of disposal owing to their non-degradable nature.Therefore, in comparison to hybrid materials, inorganic coagulants (e.g. are extensively used owing to their high effectiveness for the removal of organic pollutants from water bodies [25-28]. However, there are some drawbacks such as extensive use of alum inducing fatal diseases and production of a huge amount of sludge which becomes a new environmental issue for the treatment, regeneration, and reuse [29]. Moreover, organic flocculants produce polymeric residues which are known to be neurotoxic and carcinogenic [30]. Besides this, the non-biodegradable flocculating sludge causes problems for sludge treatment [31-34]. Thus, the use of organic/inorganic compounds in wastewater treatment is directly or indirectly affecting the environment.

1.2. Selection of bacterial bioflocculant

To avoid the harmful effects of the inorganic/organic coagulants and flocculants, attention has shifted to the synthesis of bioflocculants. Synthesis of (green) bioflocculants mainly focuses on green chemistry; that is, the careful planning of chemical synthesis and molecular design to reduce undesirable effects. It is necessary to use processes and materials that reduces the impact of utilization and generation of hazardous substances to human health and the environment. Twelve principles of green chemistry have been established to achieve the intended goal of sustainability [35]. To improve the treatment efficiency of bioflocculants and their possible application in various fields, the author dedicated to have another look on bacterial bioflocculants. In comparison to inorganic coagulants and organic flocculants, naturally occurring bioflocculants can be eco-friendly owing to their biodegradable and nontoxic nature as well as avoiding the problem of secondary pollution [36-39]. Additionally, bioflocculants provide an economical and green cleaner alternative to replace treatment processes for the removal of dyes from wastewater, since they are biodegradable and easily sustainable [40, 41]. The unique potential of bioflocculants produced from microorganisms are

Vol. XVII & Issue No. 07 July 2024
INDUSTRIAL ENGINEERING JOURNAL

MATHEMATICAL MODELLING OF PREVENTION MEASURES OF CONTAGIOUS DISEASES GLOBALLY

SIRENGO JOHN
Dr. M. PARVATHI

Abstract

this study develops and analyzes mathematical models to understand and evaluate prevention measures for contagious (human immunodeficiency virus) and contagious (acquired immunodeficiency syndrome) in globally, with particular focus on high-risk populations. The research employs a deterministic compartmental model using ordinary differential equations (odes) to simulate disease transmission dynamics. The population is divided into three compartments: susceptible (s), contagious-infected without contagious symptoms (i), and contagious patients (a). The model's analysis includes derivation of the basic reproduction number (r_0), investigation of equilibrium points, and stability analysis. Mathematical analysis demonstrates the existence of both disease-free and endemic equilibrium points. The model is locally asymptotically stable when $r_0 < 1$, indicating effective disease control. Key findings reveal that pre-exposure prophylaxis (prep) emerges as the most effective single intervention, potentially reducing contagious incidence significantly among men who have sex with men (msm) in globally. Early diagnosis shows substantial impact, while early anti-retroviral therapy (art) demonstrates limited effectiveness when implemented alone. The combined implementation of all three interventions (prep, early diagnosis, and early treatment) yields optimal results in contagious prevention. The study provides quantitative evidence to support policy decisions regarding contagious prevention strategies in globally, particularly emphasizing the importance of prep programs and early diagnosis initiatives. These findings have significant implications for resource allocation and public health policy in contagious/contagious prevention programs.

***Key Words:** CONTAGEOUS DISEASES prevention, Mathematical modeling, ODEs, Basic reproduction number, Stability analysis, PrEP,*

1. INTRODUCTION

1.1Background of the study

According to the world health organization [who] (2023), contagious and contagious continues to be a significant public health challenge in globally, with substantial social, economic, and healthcare implications. The united nations programme on contagious/contagious [uncontagious] (2023) reports that globally has approximately 1.4 million people living with contagious, making it one of the countries with the largest contagious epidemics globally. The national contagious control council [nacc] (2023) indicates that the disease particularly affects key populations, including men who have sex with men (msm), sex workers, and injection drug users.

The globally medical research institute [kemri] (2023) explains that the transmission dynamics of contagious in globally are complex, influenced by various socio-cultural, economic, and behavioral factors. The centers for disease control and prevention [cdc] (2023) notes that the virus attacks the immune system, specifically targeting cd4 cells, leading to progressive immune system deterioration. Without intervention, this progression ultimately results in contagious, characterized by susceptibility to opportunistic infections and increased mortality rates.

Prevention measures have evolved significantly since the first cases of contagious were reported in globally in the 1980s. The globally ministry of health [moh] (2023) outlines these measures including behavioral interventions (promoting safer sexual practices), biomedical interventions (pre-exposure prophylaxis - prep, male circumcision), structural interventions (policies, laws, and economic empowerment), and treatment as prevention (early initiation of antiretroviral therapy). Anderson and may (2023) note that each of these approaches plays crucial role in the comprehensive strategy to combat contagious transmission.

Garnett and anderson (2023) demonstrate that mathematical modeling has emerged as a crucial tool in understanding contagious transmission dynamics and evaluating the effectiveness of these prevention strategies. The world bank (2023) indicates that models provide a systematic framework for predicting the course of the epidemic under different scenarios, evaluating the cost-effectiveness of various interventions, identifying optimal combinations of prevention strategies, and informing evidence-based policy decisions

Uncontagious (2023) emphasizes that globally's contagious prevention efforts align with the uncontagious 95-95-95 targets: 95% of people living with contagious knowing their status, 95% of those diagnosed receiving treatment, and 95% of those on treatment achieving viral suppression by 2025

ECS Journal of Solid State Science and Technology, 2025 **14** 023008
2162-8777/2025/14(2)/023008/10/$40.00 © 2025 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited.
All rights, including for text and data mining, AI training, and similar technologies, are reserved.

Low-Temperature Synthesis of NiO Structures: Tailoring Morphology for Enhanced Dielectric Performance

Sreenivasa Kumar Godlaveeti,[1] Adel El-marghany,[2] M. Parandamaiah,[3] Madhusudhana Rao Nasina,[4] Sreedevi Gedi,[5] Ramamanohar Reddy Nagireddy,[6] G. Chinna Venkata Subbaiah,[7] and Rajababu Chintaparty[7,z]

[1]*School of Energy and Power Engineering, Dalian University of Technology, Dalian-116023, People's Republic of China*
[2]*Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia*
[3]*Department of Physics, SVA Government College (M), Srikalahasti, A.P. 517644, India*
[4]*Department of Physics, School of Advanced Sciences, VIT - AP University-522237, Andhra Pradesh, India*
[5]*Department of Material Physics, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Thandalam, Chennai 602105, India*
[6]*Department of Materials Science and Nanotechnology, Yogi Vemana University, Vemanapuram, Y.S.R. Kadapa, Andhra Pradesh 516005, India*
[7]*Department of Physics, Annamacharya University, Rajampet, A.P. 516126, India*

Nickel oxide (NiO) is a widely studied material for energy storage applications due to its excellent structural and functional properties. This study explores the effect of synthesis pH on the structural, optical, and dielectric properties of NiO nanoparticles to optimize their performance. NiO was synthesized via a hydrothermal method at pH 8 and 12, followed by calcination at 200 °C. At pH 12, X-ray diffraction confirmed the phase transition from β-Ni(OH)$_2$ to NiO, while TEM analysis revealed the formation of a one-dimensional (1D) structure. Optical studies using UV-visible spectroscopy and photoluminescence revealed defect states that contribute to improved energy storage performance. Dielectric studies revealed superior performance at pH 12. Electrochemical cyclic voltammetry confirmed the enhanced stability and energy storage capabilities of NiO with 1D structure. These findings establish NiO synthesized at pH 12 as a promising candidate for advanced energy storage technologies.
© 2025 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited. All rights, including for text and data mining, AI training, and similar technologies, are reserved. [DOI: 10.1149/2162-8777/adb20f]

Manuscript submitted January 2, 2025; revised manuscript received January 31, 2025. Published February 12, 2025.

Energy storage technologies such as lithium-ion batteries (LIBs) and super capacitors are crucial for the global shift to renewable energy sources. LIBs are popular in portable electronics, electric vehicles, and grid storage due to their high energy density, long cycle life, and low self-discharge rates. These qualities make LIBs ideal for applications requiring compact and lightweight energy solutions. Super capacitors, known for their high power density and quick charge/discharge capabilities, are essential in applications like regenerative braking and power stabilization in renewable energy systems.[1–4]

Despite their widespread use, both LIBs and super capacitors face limitations that hinder their performance. LIBs are constrained by a limited cycle life, thermal runaway risks, and reliance on costly, rare materials.[5–7] Although super capacitors excel in power density, their low energy density restricts their application to scenarios that require sustained energy output.[8] Both technologies also suffer from temperature sensitivity, aging, and structural instability, leading to performance degradation over time.[9–11]

Nickel oxide (NiO) has emerged as a promising material for energy storage due to its advantageous electrochemical properties, such as high theoretical capacitance, good cycling stability, and reversible redox activity. NiO is also abundant, cost-effective, and environmentally friendly, making it a sustainable alternative to other materials used in energy storage devices.[12–14]

However, NiO faces challenges, including low electrical conductivity and stability at high charge/discharge rates. Conventional methods to address these issues, such as using dopants or high calcination temperatures, often add complexity and increase production costs.[14–17]

This study aims to address these limitations by investigating the synthesis of NiO structures with a high dielectric constant using optimized low-temperature hydrothermal conditions. While various methods, such as sol-gel, co-precipitation, and hydrothermal techniques, have been explored in the past, these typically focus on reducing particle sizes or utilizing dopants to enhance dielectric properties.[18–20] This work, in contrast, focuses on achieving a high dielectric constant without dopants and at lower calcination temperatures, offering a more cost-effective and sustainable approach.

The novelty of this research lies in exploring the dielectric properties of NiO synthesized under specific conditions, emphasizing the unique 1D nanostructure observed in the prepared samples. These 1D structures play a crucial role in enhancing the dielectric constant, a factor often overlooked in previous studies. Additionally, the study highlights the importance of optical properties, particularly defect states, in influencing charge storage and cycling stability. These optical properties significantly contribute to NiO's performance in energy storage applications.[21–26]

By optimizing synthesis parameters and examining the relationships between morphology, dielectric behavior, and optical properties, this research aims to advance the understanding of NiO as a material for energy storage. Unlike traditional methods that rely on dopants or high-temperature processing, the hydrothermal approach used here prioritizes low-temperature synthesis, controlled morphology, and environmental sustainability. This innovative method aims to enhance NiO's performance while reducing production costs and minimizing environmental impact, offering a new pathway for NiO as a sustainable material in energy storage applications.[27,28]

Experimental

Nickel Sulfate heptahydrate (0.1 M, purity >99%, Sigma-Aldrich) was dissolved in 70 ml of distilled water. A 3 M solution of Sodium Hydroxide (analytical grade, Merck) was prepared separately. The Nickel Sulfate solution was stirred at room temperature for 15 min until a clear, green solution was formed.

Sodium Hydroxide was then added slowly, drop by drop, to the Nickel Sulfate solution, adjusting the pH to 8. The mixture was stirred for another 30 min at room temperature. The suspension was transferred to a Teflon-lined stainless-steel autoclave, sealed, and heated in a hot air oven at 130 °C for 2 h under hydrothermal conditions.

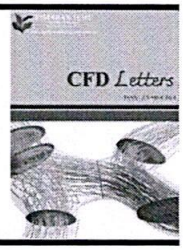
After the reaction, the autoclave was allowed to cool naturally to room temperature. The resulting green precipitate was washed several times with distilled water and ethanol to remove impurities, ensuring a neutral pH. The washed precipitate was then dried in a hot

[z]E-mail: baburaja46@gmail.com

SEMARAK ILMU PUBLISHING

CFD Letters

Journal homepage:
https://semarakilmu.com.my/journals/index.php/CFD_Letters/index
ISSN: 2180-1363



Melting Heat Transfer Effects on MHD Chemically Thermally Radiative Micropolar Fluid Flow towards Stretching Exponentially Sheet with Heat Sink/Source

Shaik Mohammed Ibrahim[1], Bommanna Lavanya[2,*], Gurram Dharmaiah[3], Thummala Sankar Reddy[4], Parakapali Roja[5]

[1] Department of Mathematics, Koneru Lakshmaiah Education Foundation, Green Fields, Vaddeswaram andhra Pradesh 522302, India
[2] Department of Mathematics, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karnataka 576104, India
[3] Department of Mathematics, Narasaraopeta Engineering College, Narasaraopet Andhra Pradesh 522601, India
[4] Department of Mathematics, Annamacharya Institute of Technology and Sciences, C. K. Dinne Andhra Pradesh 516003, India
[5] Department of Mathematics, Annamacharya Institute of Technology and Sciences, Rajampeta Andhra Pradesh 516126, India

ARTICLE INFO

Article history:
Received 17 August 2024
Received in revised form 15 November 2024
Accepted 17 December 2024
Available online 31 January 2025

Keywords:
Thermal radiation; melting heat transfer; MHD; micropolar; heat source/sink; chemical reaction

ABSTRACT

The effective use of non-Newtonian fluids is vital for situations involving heat and mass transfer. For instance, we employ thermal paste, a non-Newtonian fluid, to cool the CPU. By means of a computational approach, the behaviour of non-Newtonian on the surface of a two-dimensional steady MHD boundary layer flow and melting heat and mass transfer over a micropolar fluid is presented here, in conjunction with a partially slipper sheet at the surface providing heat generation/absorption. Further, heat radiation as well as chemical reactions are considered. Using similarity parameters, the governing nonlinear partial differential equations for heat, mass and flow are converted into a series of coupled nonlinear ordinary differential equations, then solved using the Runge–Kutta fourth order integration scheme and the shooting method. For various parameters defining the flow within the boundary layer, the new findings for velocity, microrotation, temperature and concentration are graphed. Graphic representations of local skin friction, Nusselt number and Sherwood number are provided. Boosting the melting parameter decreases fluid velocity, microrotation and temperature significantly. An intensification in slip near the boundary decreases both fluid velocity and microrotation, but opposite effects are observed on temperature.

1. Introduction

The recent discovery of micro-polar fluids has attracted significant attention from engineering and scientific communities due to their unique characteristics compared to Newtonian fluids. Unlike Newtonian fluids, micro-polar fluids exhibit microrotation effects, allowing them to model more complex behaviours in certain applications, including biological and industrial processes. In addition to being non-Newtonian fluids, micropolar fluids exhibit microscopic effects, such as micro rotational

* *Corresponding author.*
E-mail address: lavanya.b@manipal.edu (Bommanna Lavanya)

https://doi.org/10.37934/cfdl.17.7.113129

Library Progress International
Vol.44 No. 3, Jul-Dec 2024: P. 17219-17228

Print version ISSN 0970 1052
Online version ISSN 2320 317X

Original Article

Available online at www.bpasjournals.com

Evaluating Digital Learning Tools: A Structured Approach for English Language Classrooms

[1]Dr. Iliyas Ali Shaik, [2] Dr. Kumbala Suneel Kumar, [3] G.V. Narmatha [4]Dr. G. Chengaiah

[1]Assistant Professor of English, School of Technology, The Apollo University, Saketa, Murkambattu, Chittoor, Andhra Pradesh. India iliyasali.ilu@gmail.com *Scopus ID: 59325816300.*

[2]Academic Consultant, Department of English, Sri Venkateswara University (SV University), Tirupati, Andhra Pradesh – India. suneel.11ma@gmail.com

[3]Assistant Professor of English, Department of Humanities and Sciences, Annamacharya University, Rajampeta narmatharaja1984@gmail.com

[4]Assistant Professor, Department of English, IIIT Ongole, RGUKT, Andhra Pradesh nistchange.eng@gmail.com

How to cite this article: Iliyas Ali Shaik, Kumbala Suneel Kumar,G.V. Narmatha, G. Chengaiah (2024) Evaluating Digital Learning Tools: A Structured Approach for English Language Classrooms. *Library Progress International,* 44(3), 17219-17228.

Abstract

This research paper investigates the impact of Digital Learning Resources on students within the English language classroom at The School of Technology, Apollo University, Chittoor to demonstrate their effectiveness in allowing students to discover, investigate, and make their own judgements. The primary focus is to assess how Digital Learning Resources contribute to the development of critical thinking abilities among students. Long-term learning requires resource-rich settings that appreciate students' ideas and feelings. Teachers and policy makers may promote school, college or university design curriculum that aid students academically and psychologically. This research presents a thorough approach to evaluating and selecting ESL instructional and digital resources. This article is a supplement that helps language teachers identify instructional materials, particularly for ESL students. The model for innovative methods of teaching English as a second language and cognitive development may help students become critical thinkers, according to the study. Additionally, the study intends to investigate the impact of Digital Learning Resources on the skill sets of both students and educators in the classroom, as well as the possible advantages for college professors and their students. The present research revealed that books and the internet may boost training and pleasure.

Keywords: *Digital Learning Resources, Critical Thinking, English Language Classroom, Educational Technology, Higher Education*

1. Introduction

In an era dominated by technological advancements, the integration of Digital Learning Resources in education has become increasingly prevalent. Learning and growing as an individual are an ongoing process defined by the continuous intake, processing, and application of knowledge in specific contexts. The use of learning resources, which include a variety of

INTERNATIONAL JOURNAL OF RESEARCH CULTURE SOCIETY ISSN: 2456-6683
Monthly Peer-Reviewed, Refereed, Indexed Journal [Impact Factor: 9.241]
Volume - 09, Special Issue - 39, FEB - 2025 Publication Date: 28/02/2025



DOIs:10.2017/IJRCS/ICGTELLL-2025/A22 --:-- Research Article / Review

Mothers, daughters, and the Sea: A feminist reading of Karuthamma and Chakki in Chemmeen

[1] M Lakshmi Narasimha, [2] P Chitti Babu
[1]Assistant Professor, Department of Humanities & Sciences, Annamacharya University, Rajampet, 516126
Email - marellanarasimha123@gmail.com

[2] Academic Consultant, Department of English, Yogi Vemana University, Kadapa.
Email - pottipoguchittibabu@gmail.com

Abstract: Thakazhi Sivasankara Pillai's *Chemmeen(Pillai)* portrays the harsh realities faced by women in Kerala's coastal fishing communities, where patriarchal traditions and rigid social norms dictate their lives. The novel examines the struggles of Karuthamma and Chakki as they navigate love, duty, and societal pressures within a deeply hierarchical structure. Karuthamma's doomed romance with Pareekutty underscores the weight of honour placed on women, while Chakki's resilience highlights the endurance required to maintain familial stability in a male-dominated world. The ever-present sea, or Kadalamma, serves as a metaphor for both sustenance and retribution, reinforcing the belief that a wife's chastity determines her husband's fate. By intertwining personal tragedy with cultural beliefs, *Chemmeen* critiques the oppressive systems that confine women while showcasing their strength and agency in the face of adversity. This study explores how the novel reflects gendered struggles, the moral dilemmas faced by its female characters, and the symbolic role of the sea in shaping their experiences.

Keywords: *Female resilience, Love and duty, Sea goddess.*

INTRODUCTION:

Thakazhi Sivasankara Pillai's *Chemmeen* (1956) is a landmark novel in Malayalam literature, set against the backdrop of Kerala's coastal fishing communities. At its core, the novel explores themes of love, morality, fate, and the social structures that govern human relationships. One of its most striking aspects is its nuanced portrayal of gender, particularly the struggles of women in a rigidly patriarchal and caste-based society. Through the experiences of Karuthamma and Chakki, *Chemmeen* highlights how women navigate societal expectations, familial obligations, and personal desires while confronting deeply ingrained social and economic inequalities.

Karuthamma, the novel's protagonist, is emblematic of the tensions between individual autonomy and societal constraints. As a young woman in a conservative fishing village, her love for the Muslim trader Pareekutty is deemed unacceptable, not only due to religious differences but also because of the community's rigid social codes. These unwritten yet powerful laws dictate that a fisherman's wife must remain virtuous and loyal; otherwise, the sea goddess, Kadalamma, will unleash her wrath. This belief system underscores how patriarchal morality is intertwined with supernatural fears, further restricting women's agency. Karuthamma's fate is ultimately shaped by these forces, revealing the tragic consequences of transgressing societal norms.

Hybrid adaptive network-based fuzzy inference system Model for Biodiesel Production in Renewable System

M. Thirunavukkarasu[1], S. Sathish[2], V. Rahul[3], R. Vinoth[4], S. Ram[5*], O. Akbar Basha[6]

[1]Department of Automobile Engineering, Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu.
[2]Department of Mechanical Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamilnadu
[3]Department of Mechanical Engineering, CVR College of Engineering, Hyderabad, Telangana.
[4]Department of Mechatronics Engineering, Sona College of Technology, Salem, Tamilnadu
[5]Department of Mechanical Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, Telangana
[6]Department of Chemistry, Annamacharya University, Rajampeta - 516 126, Andhra Pradesh, India.
Email: othuru.akbar@gmail.com

Abstract: Biodiesel is used which positively impact the environment or reducing the dependence on fossil fuels while providing a viable alternative. This paper presents the use of machine learning approach, namely adaptive neuro-fuzzy inference system (ANFIS) to optimize and model the biodiesel production from combination of soya oil and waste cooking oil. The effect of the process parameters catalyst value (5-7 wt. %), Methnol/soya +waste cooking oil ratio (10-20) , and react time (20–40 min) were studied. after optimizing the reaction parameters, bio diesel production (BDP) of 95.8 % was achieved while maintaining catalyst value (CA) of 7wt%, Methnol/soya +waste cooking oil ratio (SW)of 20:1, and a react time (RT) of 20min. ANFIS models were implemented to improve and optimize these reaction parameters for the purpose of obtaining the maximum biodiesel output. Consequently, remarkably higher yields of 97.9% is achieved by ANFIS model by these parameters of CA of 7wt%,, SW of 10:1 , RT of 30min.

1 Introduction

Because of the continuous petroleum product problem, biodiesel has become more attractive as a fuel substitute. Biodiesel is a renewable fuel that can be used in traditional diesel engines and is biodegradable, low in emissions, non-toxic, and environmentally beneficial [1]. There are two methods for producing biodiesel: homogeneous and heterogeneous methodologies. In order to achieve high levels of catalytic activity, homogeneous synthesis usually uses chemical catalysts. The inevitable production of wastewater during the washing process,

* Corresponding Author: ram1289@grietcollege.com

© The Authors, published by EDP Sciences. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

ECS Journal of Solid State Science and Technology, 2024 **13** 083004
2162-8777/2024/13(8)/083004/5/$40.00 © 2024 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited

Synthesis and Characterization of High Dielectric Constant Zirconia Nano-Rods for Advanced Sensors and Energy Storage Applications

Sreenivasa Kumar Godlaveeti,[1] Ammar M. Tighezza,[2] Gopal Naik. B,[3] Subramanyam Pulimi,[4] Rosaiah Pitcheri,[5] Ramamanohar Reddy Nagireddy,[6] and Rajababu Chintaparty[4,z]

[1]*School of Energy and Power Engineering, Dalian University of Technology, Dalian-116024, People's Republic of China*
[2]*Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia*
[3]*Department of Physics, Annamacharya Institute of Technology & Sciences, Tirupati-517520, India*
[4]*Department of Physics, Annamacharya University, Rajampet-516126, India*
[5]*Department of Physics, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Thandalam, Chennai 602105, India*
[6]*Department of Material Science & Nano Technology, YogiVemana University, YSR Kadapa-516005, India*

This study reports the synthesis of high dielectric constant zirconia oxide (ZrO_2) nanorods (NRs) via a co-precipitation method followed by calcination at 700 °C for 2 h. X-ray diffraction (XRD) confirms a mixed-phase composition of orthorhombic and monoclinic structures, while transmission electron microscopy (TEM) reveals distinct nanorods. Energy dispersive X-ray analysis (EDAX) verifies the elemental composition. Photoluminescence (PL) spectroscopy indicates band gap energy of 1.9 eV, aligning better with orthorhombic zirconia. UV–vis analysis suggests oxygen vacancy defects potentially influencing the optical properties due to the nanorod morphology. Importantly, dielectric studies show a high dielectric constant of 29 at 1 MHz, which is approximately four times higher than commercially available ZrO_2.
© 2024 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited. [DOI: 10.1149/2162-8777/ad69c1]

Manuscript submitted May 20, 2024; revised manuscript received July 18, 2024. Published August 9, 2024.

The rapid evolution of technology hinges on advancements in sensors and energy storage. Sensors monitor our environment, detect crucial biological markers, and ensure safety and efficiency in various industries. Energy storage is essential for renewable energy adoption, powering electronics, and enabling electric vehicles.[1–6] However, limitations remain. Sensors often lack sensitivity, selectivity, or stability. Traditional sensor materials can be expensive and difficult to scale up. Energy storage devices struggle with low energy density, slow charging, and limited lifespan. To overcome these limitations, we need innovative materials and designs.[7,8] Zirconia, with its unique combination of structural, mechanical, and electrochemical properties, holds immense potential for addressing the present limitations of sensors and energy storage applications. Its high dielectric constant, excellent chemical stability, and tunable conductivity make it an attractive candidate for diverse sensing modalities and energy storage architectures.[9,10] However, the integration of zirconia into practical devices presents its own set of challenges, including issues related to material synthesis, device fabrication, and performance optimization. The development of suitable applications leveraging zirconia's inherent advantages necessitates a comprehensive understanding of these challenges and the implementation of targeted research efforts to overcome them. The properties of ZrO_2 based devices strongly depend on the material's phase, morphology, and crystallite size.[11–14] Understanding how these factors influence ZrO_2 properties is essential. ZrO_2 exists in different phases: monoclinic, tetragonal, cubic, and orthorhombic. Monoclinic is stable at room temperature but transforms to tetragonal at higher temperatures, causing structural cracks. Conversely, orthorhombic is considered an intermediate structure between monoclinic and tetragonal.[15,16] Instead of manipulating pressure and temperature, researchers can achieve different ZrO_2 phases at room temperature by adding dopants or reducing particle size to the nanoscale. Nano ZrO_2 powder can be synthesized through various methods like sol-gel, co-precipitation, and hydrothermal synthesis.[17–20]

Zirconium oxide (ZrO_2) has been extensively investigated in its tetragonal and cubic phases, particularly for their dielectric properties.[21–23] However, the orthorhombic phase, especially in the form of nanorods, remains relatively unexplored. To bridge this gap, we employ a co-precipitation method to synthesize orthorhombic ZrO_2 nanorods. This approach is advantageous due to its simplicity, low cost, environmental friendliness, and ability to produce high-purity ceramic oxides with controlled morphology and crystallinity.[24–29] This study is expected to contribute significantly to the fundamental understanding of ZrO_2 and may open new avenues for its applications

Experimental

The experiment **commences** by utilizing zirconyl chloride octahydrate (ZrOCl2.8H2O) and sodium hydroxide (NaOH) as starting materials, both of which are employed without undergoing any additional purification processes. Initially, separate solutions of 1 M ZrOCl2.8H2O and 4 M NaOH are prepared in aqueous form. Subsequently, the 4 M NaOH solution is meticulously added to the ZrOCl2.8H2O solution in a gradual manner, employing a hot plate magnetic stirrer. The resulting precipitate is then subjected to filtration, followed by thorough washing with distilled water and ethanol to mitigate agglomeration. The resultant powder is subsequently dried in an oven set to 80 °C, after which it undergoes calcination at 700 °C for duration of 2 h. Figure 1 presents a flowchart outlining a systematic approach to synthesizing nano zirconia rods.

The crystal phase and morphology were identified using an XRD with Pert Pro MPD, Cu-Kα type, where $\lambda = 1.54$ Å, along with TEM- Zeiss EM-900, 80 kV. Dielectric properties were measured using a broadband dielectric spectroscope (Novocontrol Technologies, Germany) in the frequency range of 10^2–10^6 Hz, utilizing prepared nano Zirconia sample with a diameter of 12 mm. All evaluations were conducted at room temperature.

Results and Discussion

Structural and morphology studies.—The XRD patterns of the synthesized nano-ZrO_2 powder, presented in Fig. 2, indicate a mixed phase comprising orthorhombic (Pca21) and monoclinic (P121/c1) structures (JCPDS No. 00–041–0017, 00–001–0750). Table I details the calculated interplanar spacing and phase composition. The

[z]E-mail: baburaja46@gmail.com

Vol. XVII & Issue No. 11 November-2024
INDUSTRIAL ENGINEERING JOURNAL

Comprehensive Study of Two-Dimensional CDSE Nanoplatelets: Heterostructures, Doping Approaches, Photophysical Traits, and Technological Applications

Mrs.Kandukuri Uma Devi
Mrs.G. Sravani

Abstract

In the past decade, colloidal quantum wells, also known as 2-D semiconductor nanoplatelets (NPLs), have been added to the colloidal nanocrystal (NC) family. Through the unique control of the thickness with monolayer precision, these novel materials exhibit strong 1-D quantum confinement that offers unique optical properties along with the possibility of fabricating advanced heterostructures, which are not possible with other quantum-confined nanostructures. The 2-D CdX (X = Se, S)-based NPLs provide high color purities, fast fluorescence lifetimes, and large exciton binding energies. This review covers the latest developments in the successful utilization of these flat NCs in different nanophotonic device applications. The synthesis of the advanced heterostructures of flat 2-D NCs (e.g., core–shell, core–crown, and core–crown–shell) has matured very rapidly, and new exciting optical and electronic applications are emerging. Doping of these atomically thin NCs also offers new possibilities for their utilization in different solar light harvesting, magnetic, electronic, and lasing applications. This review also includes the recent advancements in the understanding of their unique optical properties that are of utmost importance for their practical implementation in light-emitting devices and lasers. Finally, we present a future perspective on their successful utilization in
Keywords: Colloidal quantum wells (CQWs); doping;heterostructures; nanophotonic devices; Semiconductor nanoplatelets 2-D materials.

INTRODUCTION

In the early 1980s, the discovery of quantum size effects in semiconductor nanocrystals (NCs) and the resulting size-dependent optical properties began a new branch of research for materials scientists, chemists, and physicists [1], [2]. Later, in 1993, the synthesis of monodispersed spherical CdSe NCs using colloidal methods was reported [3]. Soon after this report, different experimental groups using similar colloidal methods started to synthesize and analyze different semiconductor materials at the nanoscale (e.g., ZnSe, ZnS, and CdS) [4]–[8]. In the next few years, materials with different compositions, configurations (e.g., core/shell, type I, type II, and quasi-type II), and quantum confinements (0-D and 1-D) were reported at the nanoscale [9], [10]. Joo et al. [11] reported the synthesis of 2-D CdSe nanoribbons possessing a wurtzite crystal structure 1-D confinement. Ithurria and Dubertret [12] presented the synthesis of the first 2-D zinc blende (ZB) CdSe colloidal quantum wells (CQWs), also widely known as nanoplatelets (NPLs). Interestingly, they extended this technique to other semiconductor NCs, e.g., CdS and CdTe NPLs, while maintaining precise control of the thickness at the atomic scale [13], [14]. With the addition of these 2-D NPLs to the family of colloidally synthesized NCs, the family became complete in terms of different quantum-confined NCs (e.g., 0-D, 1-D, and 2-D). The 2-D CdSe NPL-based NCs later added in the last decade have shown interesting optical properties based on their controlled thickness at the atomic scale that in turn lead to narrow emission linewidths, large exciton binding energies, high absorption cross sections, and high oscillator strengths [13]. These exceptional optical properties are all strongly required and were long sought for colloidal NCs due to their possible application in lasing, light emission, and solar energy harvesting. Furthermore, with the knowledge and experience gained by different research groups through the synthesis and handling of colloidal quantum dots (CQDs), these materials can be easily extended to more efficient and stable architectures possessing pure 1-D confinement. In a short time, different heterostructures of atomically flat NCs, e.g., core–shell, core–crown, and core–crown–shell, were reported [15]–[17]. These materials are more efficient and possess excellent optoelectronic properties. Because of the anisotropic shape of NPLs, a different type of heterostructure, namely, "core–crown," is possible. For crown growth, another semiconductor material can be grown on the periphery of CdSe host NPLs. This process implies that the thicknesses of the core and crown region are the same, and both the core and crown regions can separately absorb the illuminated photons, which in turn can increase the absorption cross section per particle [15]. These types of architectures are not possible with other quantum-confined NCs (e.g., 0-D and 1-D). Depending on the choice of crown materials, e.g., CdS, CdTe, or CdSeTe, type-I, type-II, or quasi-type-II heterostructures can be realized. In the last five years, different groups have focused on improving the synthesis of these advanced heterostructures and using them for different applications [14], [16], [18], [19]. Another important class of semiconductor NCs was achieved by the doping of transition metal or rare-earth ions in the host. Doping is a process of intentional introduction of impurity ions into the host semiconductor material. Controlled doping in host semiconductor NCs allows significant modification of their electrical, optical and magnetic properties. However, doping in CQWs has not been explored to the same extent as CQDs. Only very recently, copper doping in CdSe NPLs has been shown by a high-temperature nucleation-doping method and partial cation exchange (CE) reactions. In 2017, copper doping of flat CdSe NPLs was demonstrated, which shows extraordinarily high photoluminescence (PL) quantum yields (QYs) along with tunable and Stokes-shifted dopant-induced near-infrared (NIR) emission [20]. These materials were shown to perform well as emitters in luminescent solar concentrators (LSCs). Furthermore,

Pose Estimation of Spacecraft Using Dual Transformers and Efficient Bayesian Hyperparameter Optimization

Dr. N. Kannaiya Raja[1], Janjhyam Venkata Naga Ramesh[2], Prof. Ts. Dr. Yousef A.Baker El-Ebiary[3], Elangovan Muniyandy[4], Dr. N. Konda Reddy[5], Dr. Vanipenta Ravi Kumar[6], Dr Prasad Devarasetty[7]

Sr. Associate Professor, School of Computing Science and Engineering,
VIT Bhopal University, Bhopal, Madhya Pradesh-466114, India[1]
Adjunct Professor, Department of CSE, Graphic Era Hill University, Dehradun,248002, India[2]
Adjunct Professor, Department of CSE, Graphic Era Deemed To Be University , Dehradun, 248002, Uttarakhand, India[2]
Faculty of Informatics and Computing, UniSZA University, Malaysia[3]
Department of Biosciences-Saveetha School of Engineering,
Saveetha Institute of Medical and Technical Sciences, Chennai - 602 105, India[4]
Applied Science Research Center, Applied Science Private University, Amman, Jordan[4]
Associate Professor, Department of Engineering Mathematics, K L University, Greenfields,
Vaddeswaram, Guntur Dist, Andhra Pradesh-522302, India[5]
Assistant professor, Department of Mathematics, Annamacharya University, New Boyanapalli, Rajampet, India[6]
Department of Computer Science and Engineering, DVR & Dr HS MIC College of Technology,
Kanchikacherla, Andhra Pradesh, India[7]

***Abstract*—Spacecraft pose estimation is an essential contribution to facilitating central space mission activities like autonomous navigation, rendezvous, docking, and on-orbit servicing. Nonetheless, methods like Convolutional Neural Networks (CNNs), Simultaneous Localization and Mapping (SLAM), and Particle Filtering suffer significant drawbacks when implemented in space. Such techniques tend to have high computational complexity, low domain generalization capacity for varied or unknown conditions (domain generalization problem), and accuracy loss with noise from the space environment causes such as fluctuating lighting, sensor limitations, and background interference. In order to overcome these challenges, this study suggests a new solution through the combination of a Dual-Channel Transformer Network with Bayesian Optimization methods. The innovation is at the center with the utilization of EfficientNet, augmented with squeeze-and-excitation attention modules, to extract feature-rich representations without sacrificing computational efficiency. The dual-channel architecture dissects satellite pose estimation into two dedicated streams—translational data prediction and orientation estimation via quaternion-based activation functions for rotational precision. Activation maps are transformed into transformer-compatible sequences via 1×1 convolutions, allowing successful learning in the transformer's encoder-decoder system. To maximize model performance, Bayesian Optimization with Gaussian Process Regression and the Upper Confidence Bound (UCB) acquisition function makes the optimal hyperparameter selection with fewer queries, conserving time and resources. This entire framework, used here in Python and verified with the SLAB Satellite Pose Estimation Challenge dataset, had an outstanding Mean IOU of 0.9610, reflecting higher accuracy compared to standard models. In total, this research sets a new standard for spacecraft pose estimation, by marrying the versatility of deep learning with probabilistic optimization to underpin the future generation of intelligent, autonomous space systems.**

Keywords*—Dual-channel transformer model; Bayesian optimization; EfficientNet; pose estimation; SLAB dataset

I. Introduction

Spacecraft pose estimation is a critical and very important face of space missions or any spacecraft operation that focuses on establishing the pose of a spacecraft in line with the predefined frame of reference, often earth or another celestial body [1]. The validity of this pose estimation is critical and has some importance in satellite docking, formation flying, planetary landing, and navigation. It utilizes the cameras, star trackers, and inertial measurement units as the sources of data that through the adopted algorithms are used in estimating the pose of a spacecraft. Another noticeable issue of spacecraft pose estimation is the fact that space environment may impact the operation of the sensors and, thus, add errors [2]. Also, the requirement to perform real-time processing. currently a number of ambitious missions have been planned and initiated in near future more and more demand of autonomy is being felt during space operations thus there is a pressing need to revolutionize the spacecraft pose estimation and make it more efficient reliable and accurate for proper execution of mission and to reduce operational risks involved while exploring space [3]. Spacecraft pose estimation is a process that comes with several difficulties, which arise from the fact that space environment is demanding and highly uncongenial for any equipment, which means that any existing equipment is likely to be less accurate or reliable in the space environment as it is in the earth's environment. Thus, the first significant issue is a lack of extensive and high-quality visual information [4]. Lack of adequate illumination at night or in outer space scenarios that involve faint light may affect the functionalities of the sensors such as cameras because the contrast of prominent features

MBA-1

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 3S, 2025
https://www.theaspd.com/ijes.php

The Role of Environmental, Social, and Governance (ESG) Metrics in Investment Decisions

Dr. P. Subramanyam[1], Dr.G.Ramanjaneyulu[2] , Dr V .P. Thirulogasundaram[3], Dr. Pavankumar G Kulkarni[4], Dr B Muthukrishnan[5], Nagabhushan N[6]

[1]Associate Professor & HOD, School of Management, Annamacharya University, Rajampet, Andhra Pradesh, India Email. subbu_phd@yahoo.com

[2]Associate professor& HOD ,Department of MBA, Annamacharya Institute of Technology & Sciences* AUTONOMOUS ,Rajampet, Kadapa,Andhra Pradesh , India
Email-g.ramanjaneyulu.mba@gmail.com

[3]Dean- School of Arts& Management Studies, Bharatiya Engineering Science & Technology Innovation University (BESTIU),Andhra Pradesh, India , Email-deanms@bestiu.edu.in

[4]Assistant Professor, Department of Management Studies,Nitte (Deemed to be University), Nitte Meenakshi Institute of Technology (NMIT),Bengaluru, India.
Email-pavangkulkarni@gmail.com

[5]Associate Professor, MLR Institute of Technology, Hyderabad, India
Email-drbalamuthu@mlrinstitutions.ac.in

[6]Assistant Professor, Department of MBA, Nagarjuna College of Engineering and Technology, Bengaluru, India. Email- bhushan83@gmail.com

Abstract

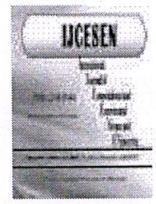
These days, more and more investors pay attention to Environmental, Social and Governance (ESG) factors when making their decisions on where to invest. It studies how ESG metrics are being considered increasingly as a vital part of investment evaluation systems, especially in India. Usually, the main factors behind investment decisions are financial things such as the rate of return, assessing risk and keeping an eye on market performance. But with rising issues about the climate, corporate responsibilities, fairness for people and sustainability in governance, investors are now using non-financial factors in managing their portfolios. The study investigates the impact of ESG on how people invest, giving particular attention to both stocks and bonds.

In this study, data is collected through ESG ratings and financial indicators as well as by talking to fund managers, analysts and sustainability officers involved in Indian listed companies. It is found that performing well against ESG leads to higher financial performance in the long term in sectors such as renewable energy, IT services and consumer goods. Companies that have greater ESG ratings are better able to handle risks and usually get more reliable and ethical funding from investors. It points out that increasing popularity of ESG is a result of developing regional trends, new regulations and greater market awareness.

While ESG is becoming popular, people still deal with the inconsistency in reporting, concerns about greenwashing and insufficient knowledge among investors. The research highlights that having better ESG disclosure and applying it in main financial models is important. It recommends that organizations take action at the policy level to promote more transparent and repeatable reporting concerning sustainability, also encouraging education to make investors feel more at ease with such investments. All in all, this paper points out that emphasizing ESG metrics is now at the heart of responsible investing. By focusing on sustainability and ethical rules, ESG investing will likely change how investments are made to create more value, minimize risks and make companies accountable worldwide and in India.

International Journal of Computational and Experimental Science and ENgineering (IJCESEN)

Vol. 11-No.2 (2025) pp. 2833-2837
http://www.ijcesen.com



ISSN: 2149-9144

Copyright © IJCESEN

Research Article

Computational Modeling of Leadership Styles and Their Impact on Organizational Success

P. Subramanyam[1], G. Ramanjaneyulu[2] , V .P. Thirulogasundaram[3], Ajatashatru Samal[4], B Muthukrishnan[5], Lokesh G R[6]

[1]School of Management, Annamacharya University, Rajampet, Andhra Pradesh, India
*** Corresponding Author Email:** subbu_phd@yahoo.com- **ORCID:** 0000-0003-3887-7337

[2]Department of MBA, Annamacharya Institute Of Technology & Sciences* Autonomous, Rajampet, Kadapa,Andhra Pradesh , India
Email: g.ramanjaneyulu.mba@gmail.com - **ORCID:** 0009-0005-6994-9171

[3]Dean- School of Arts& Management Studies, Bharatiya Engineering Science & Technology Innovation University (BESTIU),Andhra Pradesh, India
Email: deanms@bestiu.edu.in - **ORCID:** 0009-0007-5914-6775

[4]Department of MBA, Sri Venkateshwara College of Engineering, Bangalore, Karnataka, India
Email: ajatashatru7@gmail.com - **ORCID:** 0000-0001-6668-0481

[5]MLR Institute of Technology, Hyderabad, India.
Email: drbalamuthu@mlrinstitutions.ac.in - **ORCID:** 0009-0007-9507-3956

[6]Department of MBA Nagarjuna College of Engineering and Technology. Visvesvaraya Technological University.
Email: grlokeshmba@gmail.com- **ORCID:** 0000-0002-3256-7533

Article Info:

DOI: 10.22399/ijcesen.1934
Received : 25 Fenruary 2025
Accepted : 16 April 2025

Keywords :

Computational modelling,
Leadership styles,
Organizational success,
Machine learning,
Transformational leadership,
Transactional leadership.

Abstract:

Leadership has a significant influence on the achievement of an organisation by determining the level of engagement, productivity, as well as inclusive performance among employees. This research uses computational modelling tools to scrutinize the effects of several leadership styles on important organisational performance measures. These styles comprise transformational, transactional, and laissez-faire leadership. This study delves at the linkages between leadership behaviours and organisational outcomes including innovation, staff retention, and financial success using simulation models and machine learning techniques. The research delves further into the topic, investigating how computer models might be used to optimise strategic decision-making and evaluate the efficacy of leadership. Research shows that whereas transactional leadership focusses on short-term gains at the expense of long-term expansion and organisational agility, transformational leadership fosters the latter. This study adds to the growing body of knowledge in leadership analytics by shedding light on how businesses may improve their leadership development programs via the use of empirical evidence.

1. Introduction

The leadership of an organisation has a noteworthy influence on its culture, morale, and productivity. Numerous studies in the field of management have examined the efficacy of various leadership styles, including transformational, transactional, and laissez-faire approaches. Nevertheless, the complicated interplay between leadership acts and organisational results may be difficult for conventional methods of leadership analysis to capture via their reliance on qualitative evaluations, questionnaires, and case studies.

Researchers may now examine leadership styles using data-driven methodologies, thanks to developments in computational modelling and machine learning. This allows for deeper insights into how these styles effect key organisational indicators. By simulating leadership behaviours in a variety of organisational contexts using computational models, we can examine their long-term effects in advance. This study use computational approaches to evaluate various

Scheduled Maintenance: On Tuesday, 19 November, IEEE *Xplore* will undergo scheduled maintenance from 1:00-4:00 PM ET (1800-2100 UTC). During this time, there may be intermittent impact on performance. We apologize for any inconvenience.

IEEE.org IEEE *Xplore* IEEE SA IEEE Spectrum More Sites Subscribe Donate Cart Create Account Personal Sign In

Browse My Settings Help Institutional Sign In

Institutional Sign In

All

ADVANCED SEARCH

Conferences > 2024 Third International Conf...

Blockchain-enabled Trust and Transparency in Influencer Marketing on Social Media Platforms

Publisher: IEEE Cite This PDF

N.K.Thakre ; T.Navaneetha ; Narinder Kumar Bhasin ; Keerthi Samudrala ; Vuda Sreenivasa Rao ; M.Karthik **All Authors**

1
Full
Text View

Alerts

Manage Content Alerts
Add to Citation Alerts

Abstract

Document Sections

I. Introduction

II. LITERATURE REVIEW

III. Block Chain Integration In Influencer Marketing

IV. Results And Discussions

V. Conclusion And Future Scope

Authors

Figures

References

Keywords

Metrics

More Like This

Downl
PDF

Abstract:
Influencer marketing has emerged as a key tactic used by businesses on social media platforms to connect with their target customers. However, there are issues with trust... **View more**

Metadata

Abstract:
Influencer marketing has emerged as a key tactic used by businesses on social media platforms to connect with their target customers. However, there are issues with trust and transparency in this emerging sector, such as phony followers, hidden sponsorships, and inflated engagement numbers. By offering a decentralized, unchangeable record that can authenticate and validate exchanges and transactions between influencers, companies, and followers, blockchain technology offers a potentially useful alternative. The potential for blockchain-enabled reliability and openness in influencer marketing on social media platforms is examined in this paper. This examines at how blockchain might improve trust by preventing the spread of fraudulent followers, confirming influencer-brand partnerships using smart contracts, and validating the legitimacy of measurements of engagement. Furthermore, the study investigates how decentralized identity systems might improve transparency by facilitating influencers' effortless disclosure of sponsorships and identity authentication. The constraints and difficulties of using blockchain in influencer marketing are also covered in this article, including scalability and regulatory considerations. It also outlines new developments and potential paths for using blockchain technology to promote openness and trust in influencer marketing networks. Perhaps this study highlights how blockchain technology is transforming influencer marketing strategies, building stakeholder confidence, and advancing social media advertising transparency.

Published in: 2024 Third International Conference on Electrical, Electronics, Information and Communication Technologies (ICEEICT)

Date of Conference: 24-26 July 2024 **DOI:** 10.1109/ICEEICT61591.2024.10718613

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 4 (2024)
http://eelet.org.uk

The Mediating Role of Investment Strategy on the Relationship between Market Timing Ability and Mutual Fund Performance

Dr. G. Kanuka Raju[1], Mr. K. Ramakrishna[2], Dr. Kamma Ramanjaneyulu[3], Mr. K. Radha Krishna[4]

[1]Assistant Professor, School of Management, Annamacharya University, Rajampet, Annamaiah District, Andhra Pradesh, kanukaraju2021@gmail.com.

[2]Assistant Professor, Dept. of MBA, RGM College of Engineering and Technology, Nandyal, Nandyal District, Andhra Pradesh, kramakrishna40@gmail.com.

[3]Principal-In-Charge, Dr. K.V. Subba Reddy Institute of Management, Kurnool, Kurnool District, Andhra Pradesh, ramulatha.mba@gmail.com.

[4]Assistant Professor, Dept. of Management, KSRM College of Engineering (Autonomous), Kadapa, Andhra Pradesh, kakanoori@gmail.com.

Purpose/Aim:- The aim of the present research is to investigate the mediating role of investment strategy on the relationship between market timing ability and mutual fund performance in the contemporary context. The market timing ability include, economic indicators: Interest rates, inflation rates and GDP growth rate followed by technical analysis tools include: moving averages, relative strength index, fund manager expertise, investor confidence level and news and media influence, geopolitical development and natural disasters and pandemics. The mediating factor is the type of the investment strategy includes, the risk tolerance ability, time horizon, the main goals and objectives of investment strategy, market conditions and economic conditions and asset allocation and diversification. The mutual fund performance metrics are absolute returns, risk-adjusted returns, alpha value, beta value, net asset value (NAV), expense ratio and turnover ratio. Outcome:- The outcome of the research witnessed that, the impact of the market timing ability on mutual fund performance majorly dependents on the type of the investment strategy selected by the investor to invest in mutual funds. The strategic investment for enhance performance and risk assessment. Research Methodology/Approach/Design:- Designed closed ended structured questionnaire to collect the opinion of mutual fund investors with respect to three different constructs like: Market Timing Ability, Investment strategies and mutual fund investment performance. Limitations/Implications:- There are certain factors only considered under market timing ability, still there are other factor which enhances the performance of mutual funds. Sampling Technique:- Google Survey sheet being developed and applied simple random sampling technique to collect the opinion from various investors. Statistical Tools:- Applied both descriptive and inferential statistics which include Mean, SD, Correlation, Regression and Structural Equation Modeling Algorithm (SEM) and all the values of the model assessment model include, GFI, AGFI, NFI, TLI and CFI >.90 and RMSEA <.08 and Ch-Square value (P<.000). The measurement model witnesses the accuracy. Generalizability:- The outcome of the research and the model constructs can be used where need arises the mutual fund performance based on the market timing ability, the objective of investment strategy and mutual fund performance.

Keywords: - Market Timing, Mutual Funds, Fund Performance, Investments, Investment Strategies

Introduction:-

The market timing ability factors are essential especially the economic indicators are the interest rates changes are the primary driver of market movement followed by the inflation rates and GDP growth of the nation and the technical analysis tool include the moving averages and the relative strength index (RSI) and the fund manager expertise and market sentiment analysis and global events include, geopolitical development and natural disasters and pandemic conditions in various countries are the essential concepts must be studies under the market timing ability. The investment strategies include the risk tolerance ability of the investor which include, high risk-ability and low-risk ability and the time horizon of the investment include, short term investment and long-term investment and investors goals and objectives include: retirement savings, capital preservation, income generation and wealth creation, the fund diversification across different fields and other strategies are essential under investment category. The present research model include three different constructs namely: market timing ability, investment strategy and mutual fund performance. The researcher is trying to test the model with respect to direct and in-direct effect. The direct effect draws the

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

Importance of Mutual Funds in India

A.Anjanaiah[1], Dr.Suresh Talamala[2*], Dr. P.Ratna Mary[3], S.Naveen Kumar[4] and Dhanunjaya Rao Nune[5]
[1]Assistant Professor, Department of Business Administration, Annamacharya University, Rajampet, Annamaiah District, Andhra Pradesh, India.
[2]Assistant Professor, Andhra Loyola College, Vijayawada, N.T.R. District, A.P, India.
[3]Associate professor in Economics, HOD - Department of Social Sciences,
Ch SD St. Theresa's College for women (A), Eluru, Andhra Pradesh, India.
[4]Training & Placement Officer,
V.K.R, V.N.B & A.G.K College of Engineering (Autonomous), Gudivada, Krishna District, Andhra Pradesh, India.
[5]Associate Professor, Department of Management Studies,
V.K.R, V.N.B & A.G.K College of Engineering (Autonomous), Gudivada,
Krishna District, Andhra Pradesh, India.
***Corresponding Author:** Dr. Suresh Talamala[2]

Abstract
At present Indian financial markets are working more efficient and significant to control inflation, mutual funds as a part of financial markets become popularized among investors because of their convenient nature and they also facilitate easy operations with better gains. Most of the investors in India investing in equity markets rather than mutual funds, but mutual funds are very good tool to control uncertainty in the market. So that it is the time to create the awareness about mutual funds in India. Mutual Funds provide a platform for an investor to participate in the Indian capital market with professional fund management irrespective of the background of the investors. Investment in Indian mutual fund industry is growing briskly. So Many risk free with good returns schemes are available in mutual funds market, but most of the investors are not aware of the benefits of investment in mutual funds. With this paper the investors will know the importance of mutual funds.

Keywords: benefits, financial markets, mutual funds, money, industry, investors

INTRODUCTION

Mutual Funds are professionally managed pool of money from a group of investors. A Mutual fund manager invests your funds in securities including stocks and bonds, Money Market instruments or some combination and decides the best time to buy and sell. By pooling your resources with other investors in Mutual Funds, you can diversify even a small investment over a wide spectrum. It pools the savings, particularly of the relatively small investors, and invests them in a well-diversified portfolio of sound investment. As an investment intermediary, it offers a variety of services/advantages to the relatively small investors who on their own cannot successfully construct and manage investment portfolio mainly due to the small size of their funds, lack of expertise and experience, and so on. These services include the diversification of portfolio, expertise of the professional management, liquidity of investment, tax shelter, reduced risk and reduced cost.

Mutual fund is the most suitable investment mode for the common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost. Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds. Each Mutual fund scheme has a defined investment objective and strategy.

With the emergence of the capital market at the centre stage of the Indian financial system from its marginal role a decade earlier, the Indian capital market also witnessed during the same period a significant institutional development in the form of diversified structure of Mutual Funds. A Mutual fund is a special type of investment institution which acts as an investment conduit.

REVIEW OF LITERATURE

Ravi Vyas (2012) conducted a study on investor's behaviour and perception of mutual funds in Indore city found that Mutual fund companies is not giving full support for the investors in terms of advisory services, participation of investor in portfolio design, full disclosure of related information to investor, proper con- sultancy and government support also very less

Singh and Jha (2009) conducted a study on awareness & acceptability of mutual funds and found that consumers basically prefer mutual fund due to return potential, liquidity and safety and they were not totally aware about the systematic investment plan. The invertors' will also consider various factors before investing in mutual fund.

Desigan et al (2006) conducted a study on women investors' 'perception towards investment and found that women investors' 'basically are indecisive in investing in mutual funds due to various reasons like lack of knowledge about the

UNCOVERING THE DYNAMIC RELATIONSHIPS BETWEEN BANK NIFTY AND EXCHANGE RATES

1. Mr. K. Subba Reddy

Assistant Professor, Dept. of Business Administration, Annamacharya institute of technology and sciences (Autonomous): Rajampet Now in Annamacharya University, Rajampet, Andhra Pradesh 516115

ORCID: 0000-0002-3779-425X

(Ph.D. Scholar on management area at Vel Tech university Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai – 600 062, Tamil Nadu, India.)

Under the guidance of

2. Dr G MANOJ

Associate Professor department of management studies, school of management at Vel Tech university Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai – 600 062, Tamil Nadu, India.

Abstract

This research explores the intricate dance between currency rates of exchange and the Indian stock market index, BANK NIFTY. Spanning a substantial 12-year period, from January 1, 2010, to December 31, 2022, our investigation harnesses daily fluctuations in currencies like the British Pound (GBP), Japanese Yen (YEN), Euro (EUR), and US Dollar (USD), all measured against the stalwart Indian Rupee (INR). Through an adept combination of structured cointegration analysis and Granger causality tests, we aim to unravel the enigmatic connections lurking beneath the surface. As we unveil the findings, a notable revelation emerges the absenteeism of a steadfast long-run bond amid BANK NIFTY and the array of exchange rates under scrutiny. However, our astute application of VAR-based Granger causality tests casts a spotlight on the short-term dynamics, revealing that USD, EURO, and YEN wield a transient influence over BANK NIFTY. This intricate interplay is not unidirectional; BANK NIFTY's sway over the USD-INR exchange rate also comes to the fore. Investigating deeper, our analysis extends to the realm of impulse response, shedding light on the temporal nuances of BANK NIFTY's recovery from the ripples caused by exchange rate fluctuations. In this symphony of financial markets, we uncover the hidden times and measure changes that govern these complex relationships.

Keywords: Bank Nifty, Granger causality, Exchange Rates, Cointegration, Impulse response

INTRODUCTION

Exchange rate fluctuations represent a pivotal factor exerting a profound influence on stock prices, consequently molding a firm's overall value of the market. Despite the extensive global discourse on this subject, a unified consensus within the literature concerning the intricate nexus between rates of exchange and indices of the stock market remains elusive (Mroua and Trabelsi 2020). The theory of finance asserts that rates of interest and rates of exchange wield considerable sway over a firm's worth, with the ebb and flow of exchange rates playing a pivotal role in sculpting stock prices. This dynamic holds in both developed and developing

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Performance Analysis Of Mutual Funds With Special Reference To SBI Long Term Equity Fund –Growth Option Scheme

Dr. G. Kanuka Raju[1], Mr. K.Venkata Subbaiah[2]

[1]Assistant Professor, Dept. of MBA, Annamacharya University, Rajampet, Annamaiah District, Andhra Pradesh.

[2]Assistant Professor, Dept. of MBA, Annamacharya University, Rajampet, Annamaiah District, Andhra Pradesh.

Abstract:

The mutual fund industry plays a dynamic role in economy by mobilizing savings and investing them in the capital market. Mutual funds play a vital role in pooling the huge chunk through small investments. This study aims to investigate the SBI Long Term Equity Fund - Growth Option Scheme's performance review.A number of financial tests, including Standard Deviation, Beta, Treynor, Treynor, Jensen, and Fama ratios, were evaluated in order to complete the analysis, (M^2) Franco Modigliani and Lea Modigliani & R^2(Correlation squared). Gathering information from multiple sources, including RBI, SEBI, and AMFI. According to the various techniques, this research presents a picture where the majority of the year's fund returns exceed the market return.

KEYWORDS: *Mutual fund, Capital, Jensen Ratio, AMFI, RBI.*

Introduction:

A mutual fund pools the savings of small investors, places them in government and corporate assets, and produces income through dividends and interest in addition to capital gains. It functions under the assumption that a vast ocean is composed of tiny water droplets. For example, an investor with Rs. 1,000/-could not expect to make anything on their own. However, if several individuals contribute Rs. 1,000 to it, one may amass a sizeable fund that would enable them in order to benefit from economies of scale and invest in a range of shares & debentures on a dominating scale.

Review of Literature:

Jack Treynor (1965)developed the average excess return on the portfolio, or reward to volatility metric, as a means of assessing mutual fund performance. The next statistic is the Sharpe (1966) incentive to unpredictability meter, which is the average additional return of the portfolio's standard deviation divided by it.

Rural Governance strategies and policies with recent developments in Indian case studies

1. Dr. K. Rajesh kumar, Assistant Professor, Dept of Arts & Sciences, Koneru lakshmaiah education foundation, Vaddeswaram, Guntur, AP-522502
2. Dr.P.Ch.Praveen kumar ,Associate professor ,Department of Business Management Sri Hari Degree college(autonomous),Kadapa
3. Dr.Siva sankar Mandal Baidya,Asst Professor.Dept of SSH-Psychology-Vignan University Deemed to be-Guntur.
4. Dr. G. Kanuka Raju, Assistant Professor, Department of MBA, Annamacharya University, Rajampet, Annamaiah District,AP
5. P.Narasimha Babu, Research Scholar,Department of Business Management, Yogi Vemana University : Kadapa

Abstract:

In recent years, India has witnessed a rapid transformation in its governance landscape through the adoption of Electronic Governance in Rural sector initiatives. This abstract provides a glimpse into the dynamic evolution of Rural Governance in India, highlighting key trends, challenges, and the overarching impact on citizens and administrative processes.The Digital India initiative, launched in 2015, has been a driving force behind the integration of technology to streamline government services. Recent trends indicate a significant emphasis on leveraging Aadhaar integration, mobile governance (m-Governance), and open government data to enhance transparency, efficiency, and accessibility. The use of blockchain technology in certain states reflects a commitment to secure and trustworthy digital transactions. Rural Governance, the use of technology to facilitate government services, has emerged as a critical tool for fostering rural development. In the context of rural areas, where accessibility to traditional services can be limited, Rural E-Governance holds the promise of bridging gaps and empowering communities. However, the implementation of Rural E-Governance in rural settings is not without its challenges and issues, posing hurdles to its effective integration into the rural development landscape.

Keywords-E Governance, Service delivery, Digitalisation and Infrastructure facilities.

MBA - 9

International Research Journal of Multidisciplinary Scope (IRJMS), 2025; 6(2): 410-423 IRJMS

Original Article | ISSN (O): 2582-631X DOI: 10.47857/irjms.2025.v06i02.03090

E-Commerce Risk Perception and Management: A Bibliometric Review (1995–2023) Highlighting Theoretical Insights and Future Directions

Ramamurthy Bedaduri[1, 2], Srinivasa Rao Kasisomayajula[3], V Mouneswari[4], Rajesh Mamilla[2]*,

[1]NSB World Business School, Bengaluru, Karnataka, India, [2]VITBS, Vellore Institute of Technology, Vellore, Tamilnadu, India, [3]Department of Commerce & Business Management (CDOE), Koneru Lakshmaiah Education Foundation (KL University), Guntur, Andhra Pradesh, India, [4]School of Management, Annamacharya University, Rajampeta, Annamayya district, Andhra Pradesh, India. *Corresponding Author's Email: rajesh.mamilla@vit.ac.in

Abstract

The use of e-commerce is growing daily all over the world. Risk perception and e-commerce management are enhanced by technological advancements. Review analysis examines how risk management and perception have evolved in e-commerce. The bibliometric analysis of the study used Scopus metadata from 1995 to 2023. The meta-data retrieval procedure takes into account the inclusion and exclusion procedures. This study investigated a literature progress status, identified the leading contributor to the production of literature. In addition, review investigation can observe cluster analysis based on keyword occurrences using VosViewer. An annual review of research output from 2004 shows a significant rise, with substantial peaks in 2010 and 2011, suggesting rising concerns and complexity regarding e-commerce threats. The overall trend, driven by evolving digital transaction challenges, demonstrates a consistent academic interest in the subject, notwithstanding changes. The study includes geographical research productivity, regional perspectives, key sources, and many aspects of e-commerce risk management. With emerging economies like Brazil and Indonesia gaining traction, a geographical analysis finds China as the largest donor, followed by the United States, Taiwan, the United Kingdom, and India. Well-known conferences and publications are valuable resources. The paper identifies seven topic clusters, respective of supply-chain risk, consumer trust, behavioural intentions, service quality, new trends, privacy concerns, and technological adoption. Dealing with these gaps will assist in defining e-commerce risks and guiding policies aimed at increasing consumer trust and digital transaction security. These results highlight research gaps, supported theories, and scholarly research problems.

Keywords: Bibliometric Review, Cluster Analysis, E-Commerce, Future Directions, Risk Perception and Management, Theoretical Insights.

Introduction

Today, an increasing number of people reside in both rural and urban areas, and they are using e-commerce more than ever. It will pound all over the world. Every e-commerce user looks at risk and risk management. By reducing risk and fostering user trust, technological advancements are being met. The COVID-19 guidelines are boosting the sped-up online buying. These changes must be known to create sensible plans for reducing expected hazards and building consumer confidence in e-commerce systems (1). Current trends emphasize how risks, including financial instability, information security, and privacy concerns, influence customer behavior and e-commerce adoption. As e-commerce platforms expand, so does the complexity of risk management, which includes dealing with sensitive personal data, guaranteeing transaction security, and preserving customer confidence (2). The COVID-19 epidemic has brought these problems to people's attention more, sped up the trend of shopping online, and shown new flaws in e-commerce systems (3, 4). Being aware of these trends is important if you want to find good ways to lower the risks people think they face and increase their trust in e-commerce systems. It also illustrates to governments and companies the shifting landscape of digital trade and how they might mitigate increasing worries (5). Despite advancements in the field, the existing research on

This is an Open Access article distributed under the terms of the Creative Commons Attribution CC BY license (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited.

(Received 06th November 2024; Accepted 15th April 2025; Published 30th April 2025)

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue V May 2025- Available at www.ijraset.com

MCA-1

Big Data Analytics in E-Commerce using Distributed Deep Neural Networks

D Bhanu Priya[1], Dr. Yanamala Subba Reddy[2], Palagiri Mabjan[3]
[1]*Assistant Professor, Department of Computer Science & Engineering*
[2]*Professor & HOD, Department of Computer Science & Engineering, Sai Rajeswari Institute of Technology Proddatur, India*
[3]*Assistant Professor, Department of Computer Applications, Annamacharya University, Rajampet, India*

Abstract: ***Currently, there is a pressing need to emphasize big data analytics (BDA) within the e-commerce sector. Despite its potential, BDA remains not sufficiently explored, which obstructs both its theoretical and practical advancement. This paper systematically reviews the literature on BDA in e-commerce, offering a comprehensive framework that addresses its definitional aspects, characteristics, types, business values and challenges within the e-commerce context. Furthermore, the paper encourages broader discussions regarding future research challenges and opportunities in both theoretical and practical domains. Overall, the findings provide a thorough understanding of various BDA concepts, offering deeper insights into its diverse applications in e-commerce. In recent years, distributed deep neural networks (DDNNs) and neural networks (NNs) have demonstrated exceptional performance across a wide range of applications. For instance, deep convolutional neural networks (DCNNs) have continuously acquired new and additional features for various tasks in computer vision. Concurrently, a large number of end devices including Internet of Things (IoT) devices, has expanded significantly. These devices present attractive targets for machine learning applications due to their frequent connection to sensors such as cameras, microphones, and gyroscopes, which record substantial amounts of input data in a streaming mode. This study delineates the architecture of a Distributed Deep Neural Network (DDNN) that encompasses various computational hierarchies, including multiple end devices, edge nodes, and cloud platforms. The proposed concept is recognized for being new due to its belief in two fundamental layers: the convolutional layer and the pooling layer. The primary aim of integrating these two layers is to achieve optimal performance outcomes. Our findings demonstrate that the proposed methodology yields superior results in terms of accuracy and cost-effectiveness, achieving a precision rate of 99% and an economical cost of 25. Consequently, we conclude that these results surpass those reported in recent literature.***

Index Terms: ***big data analytics, e-commerce, deep convolutional neural networks, IoT, business value, neural networks, convolutional layer, pooling layer, artificial intelligence, cloud computing, deep learning.***

I. INTRODUCTION

With the advent of internet-based technologies, such as digital sensors and cloud computing, a substantial volume of data is being generated and stored [1]. BDA is the process of predictive analysis is done on a huge amount of data to create meaningful insights from large volumes of data and improve overall business performance. Based on the data variety, velocity and volume are called Big Data [2]. Many companies take advantage of analysing these big data to enhance their business strategy and gain profits [3].

A novel approach to BDA in e-commerce research using DDNN on cloud computing involves leveraging the power from e-commerce websites, utilizing distributed deep learning architectures to identify complex patterns and generate invaluable insights for personalized marketing, product recommendations, customer segmentation, and fraud detection, all while scaling seamlessly to handle large data volumes and diverse datatypes.DDNNs over distributed computing hierarchies, including cloud, the edge (fog) and end devices. Due to its distributed nature, DDNNs enhance sensor fusion, system fault tolerance and data privacy for DNN applications [4]. In the implementation of a DDNN, sections of a Deep Neural Network (DNN) are mapped onto a distributed computing hierarchy. The DDNN balances the geographical diversity of sensors which enhances object recognition accuracy and reduce communication costs. Additionally, it processes sensor data on end devices to achieve improved accuracy and further minimize communication cost and processes sensor data on end devices to achieve accuracy and reduce communication cost compare to old. It splits computational problems that require high storage and solving time into many subproblems that can be assigned to multiple machines. This enables increase their productivity by running parallel experiments over many devices i.e. Servers like GPUs (Graphical processing units), TPUs (Ticks per second).

©IJRASET: All Rights are Reserved

Vol. XVII & Issue No.10 October - 2024
INDUSTRIAL ENGINEERING JOURNAL

CROP YEILD PREDICTION AND RECOMMENDATION SYSTEM USING MACHINE LEARNING

Mukund R Patel
S.Thabreez Basha

Abstract

The Crop Yield Prediction System utilizes advanced technologies and machine learning algorithms to analyze historical data on crop yields, weather, soil quality, and agronomic practices. It provides accurate predictions of future crop yields, accessible through user-friendly web and mobile applications. Customization features enable farmers to tailor predictions to their specific needs, while a feedback mechanism continuously refines the models for improved accuracy. Real-time weather data integration enhances prediction accuracy, and decision support tools offer recommendations for optimal planting times and agronomic practices. Similarly, the Crop Price Recommendation System employs machine learning and real-time data to provide accurate crop price estimations, aiding farmers and stakeholders in making informed decisions for enhanced profitability and sustainability in agriculture.

Keyword: Crop Yield Prediction System, Machine learning algorithms, Historical data analysis, Weather data, Decision support tools, Crop Price Recommendation System

I. INTRODUCTION

The modern agricultural landscape is experiencing a transformative evolution driven by the imperative to sustainably feed a growing global population amidst the challenges of climate change and resource constraints. Amidst this backdrop, the introduction of the Crop Yield Prediction System stands as a beacon of innovation, integrating cutting-edge technologies, notably machine learning and data analytics, to tackle the complex task of forecasting crop yields. This system promises to redefine how farmers and stakeholders navigate contemporary agriculture, offering a predictive framework poised to enhance productivity, sustainability, and informed decision-making. At its core, the Crop Yield Prediction System employs a sophisticated data integration process, amalgamating diverse datasets encompassing historical crop yields, weather dynamics, soil quality parameters, and agronomic practices. Machine learning algorithms play a pivotal role, discerning intricate patterns within this data to forecast future crop yields accurately. The system's user-friendly interface, accessible through web and mobile applications, ensures accessibility to users of varying technological proficiency. Customization features enable tailoring predictions to specific crop types, geographical locations, and farming practices, fostering adaptability across diverse agricultural landscapes. Moreover, the system incorporates a feedback mechanism to refine machine learning models continually, leveraging user input and additional data for ongoing improvement. Real-time integration of weather and climate data further enhances prediction accuracy, considering the dynamic impact of changing weather conditions on crop yields. Beyond mere prediction, the system offers decision support tools empowering farmers with actionable recommendations, from optimal planting times to agronomic practices. Scalable across various agricultural scales, the Crop This data-driven approach has the potential to Yield Prediction System aligns with precision agriculture and sustainable farming practices, standing as a transformative force in global food security and agricultural sustainability.

Transitioning to agricultural economics, the Crop Price Recommendation System aims to revolutionize crop pricing through datadriven technologies such as machine learning and big data analytics. By considering a wide array of factors influencing crop prices, including historical yield data, market trends, and government policies, this innovative system generates accurate and timely crop price estimations. Adaptive to changing market conditions, it assists stakeholders in making strategic pricing decisions, optimizing pricing strategies, and fostering fair and sustainable pricing practices. This data-driven approach has the potential to revolutionize agricultural economics, fostering fair pricing, and sustainable growth within the agriculture sector. Through an exploration of factors influencing crop yield reconstruction, methodologies for crop price estimation, and potential applications, this seminar report delves into the transformative impact of the Crop Price Recommendation System on agricultural economics, paving the way for a more resilient and prosperous agriculture industry

II. LITERATURE REVIEW

The literature surrounding crop yield prediction and recommendation systems reveals a rapidly advancing field that holds tremendous promise for revolutionizing agricultural practices. Reddy and Kumar (2021) showcased the increasing utilization of machine learning algorithms in predicting crop yields, emphasizing their potential to enhance accuracy and efficiency in agricultural decision-making. Similarly, the comprehensive evaluation by Thampi et al. (2020) sheds light on the complex relationship between climate parameters and crop performance, crucial for understanding the effects of changing climates on agricultural outcomes. Pande et al. (2021) introduced the concept of a Crop Recommender System, highlighting the integration of machine learning for precise crop recommendations. Understanding and adapting to changing climates emerge as recurring themes, as illustrated in Yadav et al.'s (2022) study on the impacts of heat stress on wheat. In addition to considering crop yield and market demand, some researchers have emphasized theimportance of

MCA-3

The Bioscan 19(2)S1: 132-142, 2024
AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
www.thebioscan.com

Performance Assessment of CPU Scheduling Algorithms: AScenario-Based Approach with FCFS, RR, and SJF

P.Kavitha Assistant Professor,

Master of Computer Applications, Annamacharya Institute of Technology and Sciences, Rajampet

DOI:
https://doi.org/10.63001/tbs.2024.v19.i02.S1.pp132-142

KEYWORDS
CPU Scheduling Algorithms, Process Management in Operating Systems, First-Come, First-Served (FCFS) Scheduling, Round Robin (RR) Scheduling, Shortest Job First (SJF)
Received on:
12/03/2024
Accepted on:
10/07/2024

ABSTRACT

This study presents an extensive examination of CPU scheduling algorithms, focusing on the First-Come, First-Served (FCFS), Round-Robin(RR), and Shortest-Job-First (SJF) strategies through a carefully designed scenario-based approach. By deploying a Java-based simulation to dynamically generate random process arrival and burst times, this study simulates a variety of operational conditions to test these scheduling algorithms' adaptability and performance in environments that closely resemble real-world computing scenarios. The research aims to explore the effects of dynamic quantum size allocation on RR scheduling and assess its impact on system performance metrics such as response time and context switching overhead. Through a detailed analysis, this study seeks to providenew insights into the operational efficiency of the FCFS, RR, and SJF scheduling strategies, highlighting their strengths, limitations, and applicability across different computing environments.

INTRODUCTION

A computer system's program execution and management process comprises various crucial components and scheduling algorithms. Upon a user's application request, the system initially verifies whether itresides in the RAM. If not, it is recovered from persistentstorage, such as a hard disk drive. The role of the long-term scheduler is to determine the selection of programs that are loaded into the RAM, while the short-term scheduler is responsible for determining the allocation ofCentral Processing Unit (CPU) time to these applications. The medium-term scheduler performs process swapping in and out of RAM to manage the allocation of resources for high-priority tasks when the RAM becomes full. The short-term scheduler also referred to as the CPUscheduler, plays a crucial role in deciding which softwarewill utilize the CPU next (Süzen and Taşdelen, 2018).
The optimal distribution of RAM is vital for the proper operation of the computer system as a whole. System performance can be improved by optimizing main memory and virtual memory management. This results in increased CPU utilization, decreased response time, and increased throughput (Gaikwad, 2021). Furthermore, evidence suggests that analysts' evaluations of companies' current activity management and their forecasts of the companies' future operational success are correlated with the utilization of particular RAM (Omar *et al.*, 2021).

Many CPU scheduling algorithms play a crucial role in determining which processes are authorized access to the CPU. The referenced algorithms can optimize the computer system's performance by distributing the central processing unit to various duties. These algorithms' essence may be preemptive or non-preemptive (Adeleke, 2022). In addition, practical applications of neural networks within the operating system framework have been suggested, specifically in predicting delay periods, which could enhance the efficacy of CPU utilization (Lee and Chung, 2019).

A process control block is a data structure utilized by an operating system to maintain comprehensive information about individual processes. The aforementioned components comprise the process ID,program counter, process state, priority, inventory of open files and devices, stack section, and static and global variable information (Yamada and Kusakabe, 2008). The collection of data is frequently denoted as the "environment" of the procedure. If an operating system interrupts an ongoing process and transitions to another, it