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ICCTCCI 2024

COMPUTING, COMMUNICATION & INTELLIGENCE :
A Proceeding of ICCTCCI-2024

International Conference on
Cutting Edge Technology in Computing, Communication and Intelligence

23rd - 24th March 2024

Editors :

Srinivas Sethi
Bibhudatta Sahoo
Suvendra Ku. Jayasingh
Deepak Tosh

Organized by
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY (IMIT), CUTTACK
A constituent college of **BPUT, Govt. of Odisha, Cuttack-753008, India**

ICCTCCI 2024

IMIT — INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY — साधनायां सिद्धि:

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International Conference on

CUTTING EDGE TECHNOLOGY IN COMPUTING COMMUNICATION & INTELLIGENCE (ICCTCCI-2024)

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SRINIVAS SETHI, BIBHUDATTA SAHOO,

DEEPAK TOSH, SUVENDRA KU JAYASINGH,

SOURAV KUMAR BHOI

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ପ୍ରମୁଖ ଶାସନ ସଚିବ,
ଦକ୍ଷତା ବିକାଶ ଓ ବୈଷୟିକ ଶିକ୍ଷା ବିଭାଗ,
ଓଡ଼ିଶା ସରକାର
Principal Secretary,
Skill Development &
Technical Education Department,
Government of Odisha

Message

I am glad to know that Institute of Management and Information Technology (IMIT), Cuttack is organising the International Conference on Cutting-Edge Technologies in Computer and Computational Intelligence (ICCTCCI) – 2024.

Science plays a pivotal role in the development of humanity. I think, ICCTCCI-2024 will serves as a testament to the importance of fostering innovation and collaboration in the fields of computer science and computational intelligence.

I am confident, this national conference will be a promising platform for young researchers, academicians, scientists and industry people to exchange their ideas, knowledge, research work etc.

I extend my good wishes to the organizers, sponsors, and volunteers for their noble endeavor and wish the ICCTCCI–2024 all success.

16/3/2024

(Usha Padhee)

୨ୟ ମହଲା, ଖାରବେଲ ଭବନ, ଭୁବନେଶ୍ବର, ଓଡ଼ିଶା
2nd Floor, Kharavel Bhavan, Bhubaneswar, Odisha
0674-2391319, 0674-2391324, e-mail : etet.od@nic.in

05

BIJU PATNAIK UNIVERSITY OF TECHNOLOGY, ODISHA, ROURKELA
(An Affiliating State University of Govt. of Odisha)

Prof. Amiya Kumar Rath
Vice chancellor

Message

It is my great pleasure to extend a warm welcome to all attendees of the International Conference on Cutting-Edge Technologies in Computer and Computational Intelligence (ICCTCCI) - 2024.

I am honored to host this prestigious event, which brings together leading Researchers, Academicians, Practitioners, and Industry Experts from around the globe to share insights, discuss advancements, and foster collaborations in the fields of Computer Science and Computational Intelligence.

This year's conference promises to be an exciting and enriching experience, featuring keynote presentations, panel discussions, paper presentations, workshops, and networking opportunities. The diverse range of topics to be covered reflects the dynamic nature of our field and underscores the importance of interdisciplinary collaboration in driving innovation and progress.

I encourage all participants to actively engage in the sessions, exchange ideas, and forge new connections that will contribute to the advancement of knowledge and the development of impactful solutions to real-world challenges.

I would like to express my sincere gratitude to the organizing committee, sponsors, volunteers, and all those who have contributed to the planning and execution of this event. Your dedication and hardwork have been instrumental in ensuring the success of ICCTCCI 2024.

I wish you all a productive and enjoyable conference experience. May the discussions and interactions during these two days inspire new discoveries and propel us towards a future enriched by technological innovation.

Amija ku. Ram
(Prof. Amiya Kumar Rath)
PATRON

Hd. Qrs. : BPUT Campus, Chhend, Rourkela-769 015, Ph. : (0661) 2482557, Fax : (0661)2482562, E-mail : vc@bput.ac.in

Message from Program Chairs

Weare thrilled to extend my warmest greetings to all of you as the Program Chair of the 2024 International Conference on Cutting-Edge Technologies in Computer and Computational Intelligence (ICCTCCI), hosted by the Institute of Management and Information Technology (IMIT), Cuttack.

It is a privilege to welcome researchers, scholars, practitioners, and industry leaders from across the globe to this esteemed gathering. ICCTCCI 2024 promises to be an enriching experience, offering a platform for the exchange of ideas, insights, and innovations at the forefront of computer science and computational intelligence.

For the Conference, we received 136 full paper submissions and we accepted only 60 papers. The contributing authors are from different parts of the globe that includes United States, Japan, Jordan, South Korea, United Kingdom, Crotia and India. All the papers are reviewed by multiple independent double-blind reviewers. All the papers are also checked for plagiarism and similarity score. It was really a tough job for us to select the best papers out of so many good papers for presentation in the conference. We had to do this unpleasant task, keeping the Taylor & Francis guidelines and approval conditions in view. We take this opportunity to thank all the authors for their excellent work and contributions and also the reviewers who have done an excellent job.

On behalf of the technical committee, we are thankful to Principal Secretary to Govt. of Odisha, Skill Development and Technical Education Smt. Usha Padhee, to accept the invitation and indebted to Late Prof. A. K. Pani, Professor and Dean, XLRI Jamsedpur, General Chair of the Conference, for his timely and valuable advice. We cannot imagine the conference without this active support at all the crossroads of decision-making process. The university management of the host institute, the honorable Vice Chanceller, Prof. A. K. Rath, Patron of the conference and the Principal Prof. M. R. Kabat, Organising Chair and Convenor Prof. S. K. Jayasingh have extended all possible support for the smooth conduct of the Conference. Our sincere thanks to all of them.

We would also like to place on record our thanks to all the keynote speakers, tutorial speakers, reviewers, session chairs, authors, technical program committee members, various chairs to handle finance, accommodation, and publicity and above all to several volunteers. We are also thankful to Taylor & Francis publication house for agreeing to publish the accepted papers.

As Program Chair, we are committed to curating a diverse and engaging program that reflects the latest developments and emerging trends in our field. From keynote presentations by renowned experts to paper sessions showcasing groundbreaking research, our conference agenda is designed to inspire, educate, and spark meaningful discussions.

I encourage each of you to actively participate in the sessions, contribute your perspectives, and forge connections with fellow attendees. It is through collaboration and knowledge-sharing that we can drive progress and innovation in our respective areas of expertise.

I extend my sincere appreciation to the organizing committee, sponsors, volunteers, press and media, and partners for their invaluable support in bringing ICCTCCI 2024 to fruition. Your dedication and hard work have been instrumental in shaping this conference into a memorable and impactful event.

To all participants, I wish you a stimulating and productive experience at ICCTCCI 2024. May the insights gained and connections made during this conference propel you towards new heights of achievement and success.

Thank you for your participation, and welcome to ICCTCCI 2024!

Warm regards,

Prof. Bibhudatta Sahoo
Prof. Srinivas Sethi
Prof. Deepak Tosh
Program Chairs, ICCTCCI 2024

Message from Organizing Chair

It is with great pleasure and enthusiasm that I extend a warm welcome to all attendees of the 2024 International Conference on Cutting-Edge Technologies in Computer and Computational Intelligence (ICCTCCI), hosted by the Institute of Management and Information Technology (IMIT), Cuttack.

I am delighted to welcome researchers, academicians, professionals, and industry experts from across the globe to this distinguished gathering. ICCTCCI 2024 promises to be a platform where the latest advancements, innovative ideas, and cutting-edge research in the fields of computer science and computational intelligence will be showcased and discussed.

The theme of this year's conference underscores the importance of staying at the forefront of technological innovation and leveraging computational intelligence to address the challenges of our time. Through keynote speeches, paper presentations, panel discussions, and workshops, we aim to facilitate meaningful exchanges of knowledge and ideas that will shape the future of these disciplines.

I encourage all participants to actively engage in the various sessions, share their expertise, and foster collaborations that transcend geographical boundaries. Together, we can drive progress, inspire innovation, and make significant contributions to the advancement of science and technology.

I extend my heartfelt appreciation to the organizing committee, sponsors, volunteers, and everyone involved in making ICCTCCI 2024 a reality. Your dedication and hard work have been invaluable in ensuring the success of this event.

To all attendees, I wish you a stimulating and rewarding experience at ICCTCCI 2024. May your interactions and discussions lead to new insights, collaborations, and opportunities for growth.

Thank you for joining us, and once again, welcome to ICCTCCI 2024!

Prof.(Dr.) Manas Ranjan Kabat
Principal
IMIT, Cuttack

Message from Convenor

It is my distinct pleasure to extend a heartfelt welcome to all attendees of the 2024 International Conference on Cutting-Edge Technologies in Computer and Computational Intelligence (ICCTCCI), meticulously organized by the Institute of Management and Information Technology (IMIT), Cuttack.

As the Convenor of ICCTCCI 2024, I am thrilled to see the culmination of months of preparation and dedication resulting in this prestigious event. Our conference serves as a convergence point for leading researchers, academics, practitioners, and industry professionals from around the world, fostering collaboration and innovation in the realms of computer science and computational intelligence. ICCTCCI 2024 promises to be an enriching experience, offering a diverse array of sessions including keynote addresses, paper presentations, workshops, and networking opportunities. It is our collective aim to explore the latest advancements, share insights, and ignite discussions that will shape the future of our fields. I encourage each of you to actively engage in the conference proceedings, share your expertise, and cultivate meaningful connections with your peers. Together, let us harness the power of collaboration to address the challenges of today and chart a course towards a brighter tomorrow.

I extend my deepest gratitude to the organizing committee, sponsors, volunteers, and partners for their unwavering support and tireless efforts in making ICCTCCI 2024 a resounding success. Your dedication and commitment have been instrumental in bringing this event to fruition. To all participants, I wish you an enlightening and rewarding experience at ICCTCCI 2024. May the discussions and interactions during this conference inspire new ideas, collaborations, and breakthroughs that will shape the future of our disciplines.

From the bottom of my heart, I express my heartiest gratitude to Smt. Usha Padhee, IAS, Principal Secretary to Govt., SD&TE Department for giving her consent to grace the conference as the Chief Guest. I sincerely thank Prof. A. K. Rath, Honourable Vice Chancellor, BPUT, Patron, Late Prof. Ashish Kuma Pani, XLRI, Program Chair, Prof. Bibhudatta Sahoo, NIT, Rourkela, Prof. Srinivas Sethi, IGIT, Sarang, Prof. Deepak Tosh, University of Texas, Program Chairs, Prof. Manas Ranjan Kabat, Organizing Chair, Prof. Chittaranjan Tripathy, Ex-VC, BPUT & Sambalpur University, Prof. Bibhu Prasad Panigrahi, IGIT Sarang, Prof. Mrutunjaya Bhuyan, University of Malaya, the advisors for their continuous support and constant inspiration. Great thanks go to Dr. Sudhir Kumar Nayak, Scientist, Japan Meteorological Corporation, Osaka, Japan who graced the occasion as Keynote Speaker. Special thanks go to the publishing committee, editorial board for their dedicated help and support. Many thanks go to all our beloved teachers, staff members, PhD Scholars, M. Tech Scholars and student volunteers whose selfless contribution has made it possible to make the conference successful.
Thank you for your participation, and welcome to ICCTCCI 2024!

Warm regards,

Dr. S. K. Jayasingh
Convenor, ICCTCCI 2024

Schedule

Timing	Events
9:00 AM	Registration, Tea

Inauguration

Timing	Events
10:30 AM	Lighting of candle by the Guests
10:31 AM	BPUT Anthem
10:34 AM	One minute condolence for Prof. Ashish Pani, Professor, XLRI, Jamshedpur, General Chair who passed away on 25.02.2024
10:35 AM	Conference address by Prof. M. R. Kabat, Principal, IMIT, Cuttack
10:40 AM	Conference report by Program Chair, Prof Srinivas Sethi, IGIT, Sarang
10:45 AM	Address by General Chair I/C, Prof. B. D. Sahoo, NIT, Rourkela
10:50 AM	Address by Keynote Speaker, Dr. Sridhara Nayak, Senior Scientist, Japan Meteorological Corporation, Osaka, Japan
11:00 AM	Address by Patron, Prof. Amiya Kumar Rath, Vice Chancellor, BPUT
11:05AM	Address by Chief Guest, Smt. Usha Padhee, Principal Secretary to Govt., SD & TE Department, Govt. of Odisha
11:15AM	Vote of Thanks by Dr. S. K. Jayasingh, Convenor
11:30 AM	Keynote Talk & Presentation by Dr. Sridhara Nayak

Paper Presentation Parallel Sessions 1 and 2
Time (2:30 PM to 04:00 PM) (Physical Presentation)

Paper Presentation Session No./ Link	Chair and Co-Chair	Paper to be Presented
Session 1 (Image and Video Processing/ Computer Vision/ Sensors/ Pattern Recognition)	Prof. Sourav Kumar Bhoi PMEC Berhampur Prof. Subasish Mohapatra OUTR, BBSR	**Paper ID** – 54, 58, 61, 93, 96, 98, 102
Session 2 (AI/ML/Healthcare)	Prof. Chittaranjan Mallick PMEC Berhampur Prof. Pradyumna Ku. Tripathy Silicon University, BBSR	**Paper ID** – 9, 19, 30, 42, 78, 83, 91

Paper Presentation Parallel Session 3 and 4
Time (4:15 PM to 5:45 PM) (Physical Presentation)

Session 3 (Distributed Computing/ Networking/IoT/Communication)	Prof. Sanjib Kumar Nayak VSSUT Burla Prof. Sohan Kumar Pande SIT, Sambalpur	Paper ID – 14, 35, 59, 69, 79, 88, 118
Session 4 (Optimization/Big Data/Automation/Security)	Prof. Rajendra Prasad Nayak GCE, Kalahandi Prof. Tushar Kanta Samal DREAMS Cuttack	Paper ID – 20, 29, 53, 55, 57, 92, 119

March 24, 2024 (Day 2)
Paper Presentation Parallel Sessions 5 and 6
Time (10:00 AM to 11:30 AM) (Online Presentation)

Paper Presentation Session No./ Link	Chair and Co-Chair	Paper to be Presented
Session 5 (Image and Video Processing/ Computer Vision/ Sensors/ Pattern Recognition)	Prof. A. Anitha VIT Vellore Prof. Satyasundara Mahapatra PSIT, UP	Paper ID – 13, 31, 40, 64, 70, 97, 99, 101
Session 6 (AI/ML/Healthcare)	Prof. Alekh Mishra NIT Jamshedpur Prof. Sasmita Acharya VSSUT Burla	Paper ID – 11, 12, 28, 43, 60, 66, 94, 95

Paper Presentation Parallel Sessions 7 and 8
Time (11:45 AM to 01:45 PM) (Online Presentation)

Session 7 (Distributed Computing/ Networking/ IoT/Communication)	Prof. Satyaprakash Sahoo VSSUT Burla Prof. Umashankar Ghugar OP Jindal University	Paper ID–17, 33, 36 39, 44, 56, 75, 104
Session 8 (Optimization/Big Data/ Automation/Security)	Prof. Satyabrata Das VSSUT Burla Prof. Asima Rout IGIT Sarang	Paper ID– 6, 32, 34, 38, 48, 76, 112, 122
1:45 PM-2:30 PM	**Lunch Break**	

Valedictory Time (03:00 PM to 03:30 PM)

Program Chair

Dr Bibhudatta Sahoo is a computer science professor at NIT Rourkela, India, specializing in Algorithmic Engineering, Distributed Systems, Cloud Computing, Fog/Edge Computing & IoT, and Software Defined Networks/NFV. With a wealth of knowledge and expertise in these areas, Dr. Sahoo is at the forefront of cutting-edge research and innovation. Their research focuses on developing efficient algorithms and designing scalable distributed systems to address the challenges posed by modern computing paradigms such as cloud computing, fog/edge computing, and IoT. Driven by a passion for advancing the field, they have significantly contributed to developing software-defined networks and network function virtualization. Through their research, publications, and mentorship, Dr. Sahoo has inspired and empowered countless students, fostering a new generation of computer scientists equipped with the skills to tackle complex problems in the rapidly evolving world of technology.

Prof. Bibhudatta Sahoo, NIT Rourkela

Program Chair

Prof. Srinivas Sethi is Professor in Computer Science Engineering & Application, Indira Gandhi Institute of Technology, Sarang (IGIT, Sarang), India, and has been actively involved in teaching and research since 1997. He did his Ph.D., in the area of routing algorithms in mobile ad hoc network and is continuing his research work in the wireless sensor network, cognitive radio network, and cloud computing, Big-Data, BCI, Cognitive Science. He is Member of Editorial Board for different journal and Program Committee Member for different international conferences/workshop. He is Book Editor of 4(four) international conference proceedings published in Springer, and Taylor & Francis. He has published more than 80 (eighty) research papers in international journals and conference proceedings. He completed 8(eight) numbers of research and consultancy project funded by different funding agencies such as DRDO, DST, AICTE, NPIU, and local Govt. office.

Prof. Srinivas Sethi IGIT, Sarang

Program Chair

Dr. Deepak Tosh (Senior Member, IEEE) is an Assistant Professor of Computer Science at the University of Texas at El Paso. His research focuses on addressing various multi-disciplinary networking and cybersecurity challenges associated to critical national infrastructures, Industrial Internet of Things, Blockchain, and tactical battlefields. He works closely with researchers from U.S. Air Force Research Laboratory (AFRL), Sandia National Lab, and Army Research Laboratory (ARL) on developing resilient data/process provenance mechanisms for industrial operational technology environments, and military applications. His research has been funded from Department of Energy, National Science Foundation (NSF), and Department of Defense. He has authored/co-authored more than 70 peer-reviewed conference papers, book chapters, and journal papers. Two of his research

Dr. Deepak Tosh
Assistant Professor of Computer Science, University of Texas

works on Blockchain were also awarded as "Top 50 Blockchain Papers in 2018" at BlockchainConnect Conference, 2019. He is also a recipient of prestigious NSF CAREER award, 2022.

Keynote Speaker

Dr. Sridhara Nayak is originally from Odisha, where he completed his academic education up to the Master's degree level. He obtained his PhD from IIT Kharagpur in 2014 and subsequently served as a 'Researcher' at the National Research Institute for Earth Science and Disaster Resilience in Japan until 2017. Following that, he held the position of 'Specially Appointed Associate Professor' at Kyoto University in Japan until 2022. Currently, he holds the title of 'Senior Scientist' at Japan Meteorological Corporation. Dr. Nayak's academic journey has been distinguished by numerous accolades and recognitions. He was the recipient of the prestigious Austrian Academy of Sciences Scholarship from Austria and was honored with the Young Talent Researcher – Level (A) Fellowship from CNPq, Government of Brazil. He has been actively involved in various national projects funded by MEXT since 2014 and his expertise and engagement extend to several international professional societies, including SAMA, JSCE, AGU, AOGS, JpGU, JSHWR, and MSJ. Throughout his career, Dr. Nayak's research has encompassed a diverse range of fields, spanning topics such as Data Science, Weather Forecasting, Climate Modeling, Extreme Events, Remote Sensing & GIS, and Wind Energy. Presently, his primary focus lies in the development of weather forecast systems for Japanese cities, with a remarkable scale of resolution at just 100 meters. He also serves as an Associate Editor of a prestigious journal "Geomatics, Natural Hazards and Risk". He has published so far 48 journal papers, 80 conference papers, 12 project reports, 2 book chapters. He has visited more than 20 different countries and more than 50 times.

Dr. Sridhara Nayak
Senior Scientist,
Japan Meteorological
Corporation, Osaka,
Japan

Organizing Chair

Prof. Manas Ranjan Kabat
Principal, IMIT, Cuttack

Prof. Manas Ranjan Kabat, Ph.D., is Professor, Department of Computer Science and Engineering, VSS University of Technology (VSSUT), Burla, Odisha. Dr Kabat has been engaged in teaching and research for more than a decade and has published more than 20 research papers in various refereed international journals and conferences. His research interests include Wireless Sensor Networks and Cloud Computing. He is now the Principal, IMIT, Cuttack. He has likely made significant contributions to the academic or administrative spheres of the institution.

Convenor

Dr. Suvendra Kumar Jayasingh
Associate Professor & HOD, CSE, IMIT, Cuttack

Dr. Suvendra Kumar Jayasingh is working as Associate Professor and HOD in the Department of Computer Science & Engineering, Institute of Management and Information Technology (IMIT), Cuttack (A Constituent College of BPUT, Govt. of Odisha) after being selected in OPSC (Orissa Public Service Commission) in 2005. He has obtained his Bachelor of Engineering in the year 2003 from University College of Engineering (UCE), Burla (Now VSSUT). He got his M. Tech. in Computer Science & Engineering in 2007 from RVU, Udaipur and Ph. D. in Computer Science & Engineering in 2020 from North Orissa University, Baripada (Now Maharaja Sriram Chandra Bhanja Deo University). He is having 20 years of teaching experience in Computer Science & Engineering and MCA. He has published several articles, book chapters in reputed National and International journals and periodicals including Springer and Taylor & Francis and has presented research papers in National and International Seminars and Conferences. He has also participated in many National and International Workshops, FDPs, Industrial Training Programs organized by IITs, NITs and NITTTRs. His research interests include Artificial Intelligence, Data Mining, Soft Computing, Machine Learning, Computational Intelligence, Database Management System and Algorithm Analysis and Design. He has published a book on "Introduction to Machine Learning" and a UK patent on "Smart Home Air Quality Monitoring Device". He is a life member of Indian Society for Technical Education (ISTE).

List of Papers

Paper ID	Title of Paper
6	Single Phase Shunt Active Power Filter using AHCC and CHCC
9	A comparative analysis of ANN and RNN Technique for UWB Gaussian pulse based Indoor Localization
11	DDOS Attack Detection using Time Based Features
12	SecureGuard: DeepShield – A Deep Learning-Powered Defense Against DoS Attacks
13	Marine Biodiversity Conservation through Computer Vision and Deep Learning
14	Comparison of Various Factors Responsible for Task Offloading in Edge Computing Framework
17	Load Balancer Model in the Cloud Computing Environment
19	Study and Comparison of Malware Detection using Deep Learning Techniques
20	Nature-Inspired Meta-heuristic Algorithms for Optimizing Neural Network Training: A Focus on Particle Swarm Optimization and Firefly Algorithm
28	PCAFeEx: A Machine Learning-Based Concept for Predicting Heart Disease Using Principal Component Analysis Feature Extraction
29	Effectiveness of SOSA, FFA and GOA Algorithms for Epileptic Seizure Detection using DWT and SVM
30	A Novel Approach to Detect Epileptic Seizure from EEG Signal Using WPT and LSSVM Classifier Optimized by Tunicate Swarm Algorithm
31	Antral gastritis preliminary diagnosis by endoscopic image analysis using Deep learning approach

Paper ID	Title of Paper
32	Design and Development of Privacy Preservation Approach in Data Mining Using Multivariate Framework in Continuous and Multi-Dimensional Data
33	Virtual IGA-GRU: An approach for load balancing in cloud computing
34	Fuzzy Logic Based Usability Sub-Characteristic Analysis for M-Learning Application Utilizing GQM & ISO 9241-11
35	Analytical Studies of Load Variation on Terminal Voltage and Frequency of Three Phase Synchronous Generator using Fractional Order PI Controller
36	Blockchain Smart Contract Fortification using Bytecode Analysis to Address Vulnerabilities
38	Fingers Identification Architecture for AIR CANVAS: A Case Study
39	Performance Evaluation of Cloud with load balancing Algorithms
40	AUTOMATION OF GENETIC DIAGNOSIS FOR DETECTING CHROMOZONE STRUCTURE
42	EXPLORING CARDIAC DYNAMICS: AN INVESTIGATION OF MACHINE LEARNING APPROACHES IN HEART ATTACK PREDICTION
43	An Investigation of the Applicability of Machine Learning Methods to the Forecasting of Cardiovascular Disease
44	Simulation and Analysis of Power Quality Improvement FLC Based DVR for Mitigating Voltage Sags in Grid Connected Power Systems.
48	A Comparative Analysis of Working Memory Dynamics through EEG Methodology
53	Zero forcing conditioning of energy efficiency in a contemporary quasi-massive MIMO system
54	Energy Efficient Wireless Sensor Networks using Support Vector Machine
55	Power control of a doubly fed induction generator based wind turbine using bio-inspired algorithm optimized fuzzy logic controller
56	Implementation and Evaluation of Software Defined Wide Area Network (SD-WAN) Infrastructure using Cisco System Technologies
57	e-Ensemble for Gene Expression Data using Hybrid Feature Selection
58	Path planning of Autonomous Underwater Vehicle in swimming pool under communication constraints
59	An Intelligent WBAN to Predict Cardiovascular Diseases
60	Online Auction Fraud Detection Using Deep Learning Network
61	Advancing Medical Diagnosis: An In-Depth Exploration of Image Processing Techniques for Swift and Accurate Detection of Brain Tumors in Magnetic Resonance Imaging
64	Comparative Analysis of Deep Learning Architectures for MRI Classification
66	Ranking Optimized Statistical Models for Time Series Forecasting of Crude Oil Price
69	Arduino Uno based Women Safety Device with IoT
70	River Pollution Detection and Quantification with Aerial Imagery using YOLOv8
75	Survey on Diverse Access control techniques in Cloud Computingin cloud computing
76	A Mathematical Modeling Approach For Customized Robot In Smart Manufacturing
78	Precision Cardio Care: Unveiling the Power of Machine Learning Models for Cardiovascular Risk Prediction
79	Design and Implementation of Viterbi Decoder using Verilog HDL
83	Enhancing Environmental Impact Assessments for Sustainable Development: A Machine Learning Approach

Paper Id	Title of Paper
88	Ultrasonic Communication Using ASK Modulation and Demodulation Technique for Implanted Sensor in Wireless Body Area Network
91	Harmony in Harvest: Machine Learning's Symphony for Sustainable Agriculture
92	Efficient FOG task scheduling using humming bird based task assignment
93	Efficient Watermarking Framework Using Cryptography and Bit Substitution
94	Analyzing the Effectiveness of Machine Learning Algorithms in detecting Fake News
95	Analyzing the Machine Learning Approaches in Predicting the Crop Yield: A Decade Literature review
96	BCViT: A Vision Transformer Enabled Deep Learning Model for Brest Cancer Identification
97	Enhancing Watermark Detection in Digital Media Ownership Protection through Hamming Coding
98	Structural integrity preservation through digital watermarking using dual decomposition techniques
99	Review Article on the Use of Machine Learning Models and Ayurveda in Early Malignancy Prediction
101	Predictive Modelling of Disease-Gene Association using Machine Learning Approaches
102	Design of Wireless Sensor Network-based IoT platform for Precision Agricultural Applications
104	Optimizing Optical communication Using Optical Fiber at Tri-Optical Windows
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118	IoT Enabled Green House Environment Automation
119	Restaurant Recommendation System Utilising User Preferences With Content-Based Filtering
122	Cancer Prediction Using Data Mining Techniques
123	Exploring the underlying patterns and relationships between temperature and heavy rainfall events over Western Japan
124	Ancient Hydrological Water Imbalance due to Climate Change Impact: The Pannonian Sea
125	Integrating Analytical Hierarchy Process (AHP) to Assess Land Suitability for Paddy Cultivation: A Case Study of Suphanburi Province, Thailand
126	Solar Radiation Flux Trends over India using Regional Climate Model: Assessing Present and Future Scenarios for Renewable Energy Perspectives
127	Water quality Analysis using Intelligent Framework

Paper ID : 6
SINGLE PHASE SHUNT ACTIVE POWER FILTER
USING AHCC AND CHCC

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Abstract : This paper outlines a shunt-type Active Power Filter (SAPF) for single-phase systems, featuring integration with a grid-connected battery source. The objective of the presented system is to compensate reactive power, mitigate harmonics, and supply real power to a nonlinear load. The interface between the grid and a battery source is done using a Voltage Source Converter (VSC) that is connected in a shunt with a nonlinear load. Hence harmonics in source current are mitigated. Adaptive Hysteresis Current Control (AHCC) and Conventional Hysteresis Current Control (CHCC) methods are used for the generation of switching pulses of the converter. Instantaneous Reactive Power Theory is used for evaluating compensating current to mitigate harmonics and current harmonics in the source. It is found that AHCC shows better compensation than CHCC.

Key words: Shunt Active Power Filter (SAPF), Voltage Source Converter (VSC), Adaptive Hysteresis Current Control (AHCC), Conventional Hysteresis Current Control (CHCC).

Paper ID : 9
A COMPARATIVE ANALYSIS OF ANN AND RNN TECHNIQUE FOR UWB GAUSSIAN PULSE BASED INDOOR LOCALIZATION

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Abstract. Localization is the method that is applied in wireless network to upgrade routing and build up the security. The ultra-wideband (UWB) acts a pivotal role in positioning system due to its varieties of characteristics such as: broad frequency band (7.5GHz), capability of penetrating through the obstacles, high precision (cm), ability of avoiding multipath fading etc. The IEEE 802.15.3a standardization is allocated to UWB indoor channel for wireless PAN, which offers low cost with less consumption of the power along with high data rate to WPAN devices. The different UWB Channel models that includes are CM-1, CM-2, CM-3, and CM-4. Now a day the Indoor positioning system (IPS) is very important for rapid growth of Artificial intelligence technology along with growth of context aware services in the field of Internet of Things (IoTs). Machine learning (ML) algorithms act as an important tool in the field of system approximator. They have the ability to generate the required output without going for the system analysis. The accuracy of localization can be increased by considering the machine learning techniques for predicting the target location in the Indoor area system. . Here in this paper, the Gaussian monopulse signal is made allowance for IPS. This received pulse undergoes the performance of averaging and correlation thereupon the original transmitted pulse signal in order to calculate the time of arrival (TOA) data for locating the target node position in IPS. It also includes the analysis and evaluation of Artificial Neural Network(ANN) and Recurrent Neural network (RNN) ML for UWB localization in a archetypal indoor positioning system. The MSE of RNN is observed to be minimum during both the training and the testing phase than that of ANN technique.

Keywords- ANN, Localization, ML, RNN, UWB

DDOS ATTACK DETECTION USING TIME BASED FEATURES

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Abstract : One of the most common and expensive cybersecurity risks nowadays is a distributed denial-of-service (DDoS) assault. Because of their potential to disable network services and cause millions of dollars in damages, businesses and governments must take activemeasures to detect and mitigate DDoS attacks. While previous studies have shown that shallow and deep learning classifiers are useful for detecting DDoS assaults, nothing has been studied on the use of time-based features and classification for many differentkinds of DDoS attacks. In this paper, we propose and analyze the performance of 25 time-based features for binary and multiclass classification of 12 distinct DDoS assault types. In addition, we conducted tests to evaluate the effectiveness of one deep learning classifier vs eight typical machine learning classifiers in two distinct settings. Our results reveal that most models achieved 99% accuracy in detecting DDoS attacks in both the control and time-based studies, but only achieving 70% accuracy in classifying individual DDoS attack types. This smaller time-based feature subset alone is advantageous for near-real time applications that utilize continuous learning because training on it was proven to effectively reduce training time without affecting test accuracy.

Keywords : DDoS, CICDDoS2019, SSDP, SYN Flood, PORTMAP, LDAP, CNN

SECUREGUARD: DEEPSHIELD - A DEEP LEARNING-POWERED DEFENSE AGAINST DOS ATTACKS

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Abstract : A hybrid intrusion detection and prevention system (IDS/IPS) designed specifically to identify and neutralize distributed denial of service (DDoS) attackers using a Deep Learning algorithm is implemented in this research paper, dique. The web server's IDS/ IPS system applies the suggested deep learning model to categorize incoming packets into two groups: benign, which represents regularly occurring traffic, and malignant, which contains probable threats, thereby preventing attacks involving denial-of-service. The Dique's Graphical User Interface (GUI) allows us to toggle between the IDS and IPS modes of operation, as it also provides both a graphic and textual representation of the details of recorded and classified packets. With a multilayered Deep Feed Forward Neural Network trained on the CICD - DoS2019 dataset, our proposed DoS attack categorization model achieved an accuracy of 99.4%.

Keywords: Dique, hybrid intrusion detection and prevention system, DoS, IDS, FFNN

MARINE BIODIVERSITY CONSERVATION THROUGH COMPUTER VISION AND DEEP LEARNING

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Abstract : The underwater ecosystem, a sanctuary for numerous fish species, is a crucial area of exploration for marine biodiversity. Accurate methods of classifying, counting, and localizing fish are essential for protecting this biodiversity. This paper explores the use of computer vision and deep learning to automate these tasks and overcome challenges in the underwater environment. The research aims to overcome the complexity of underwater environments, occlusions, and lighting variability. The proposed hybrid model has been tested and validated, with results showing 95% classification, 97% counting, and .78 mAP scores. The project aims to provide tools and insights to explore and safeguard this fragile ecosystem, ensuring its future for future generations.
Keywords : Computer Vision, Deep Learning Architecture, Classification, Counting, Localization, Resnet50, Mobilenet.

COMPARISON OF VARIOUS FACTORS RESPONSIBLE FOR TASK OFFLOADING IN EDGE COMPUTING FRAMEWORK

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Abstract : Edge computing is a novel computing paradigm that calls for processing data at the network's edge and has received attention as a result of the growth of the Internet of Things (IoT) and the adoption of rich cloud services. Computation offloading is a technique for saving time and energy on mobile devices with limited resources by carrying out some activities on other devices or servers. It is viewed as a solution to the limited resource problem of IoT edge devices. The offloading decision problem is influenced by several factors. Due to this, many offloading tasks are unable to fulfil their intended goals. In this paper, we provide a thorough analysis of computational task offloading in edge computing, including offloading schemes and influencing elements. Finally, we have presented the techniques used for task offloading.

Keywords: Bandwidth. Edge computing IoT Task Offloading Latency.

LOAD BALANCER MODEL IN THE CLOUD COMPUTING ENVIRONMENT

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Abstract : As the state of sophisticated technology evolves, cloud-based services are becoming more crucial. In these situations, the user's needs may determine how much work is done on the suitable server in the open data-driven virtualization environment. The newest technology, cloud computing, gives users immediate access to computer features without requiring their direct involvement. For this reason, cloud-

based enterprises must be scalable to be successful. The goal of this research is to provide an original virtualized cluster architecture that preserves the centralized management of cloud server resources while enabling cloud-based applications to scale flexibly. Resources can be constantly changed through auto-scaling to satisfy various demands. To automate the setting up and balance of virtualized resources, an automatic scaling method based on ongoing implementation sessions will be started. The recommended approach also takes energy costs into account. The suggested study effort has demonstrated that the recommended technique may effectively handle spikes in load demand while retaining higher resource utilization. Order group measurements offer auto-scaling features that let you automatically add or remove instances based on fluctuations in load from a controlled instance group. To handle cloud services effectively and discover the most practical, ideal solution, this study paper offers an examination of auto-scaling processes in cloud services.

Keywords : Auto-Scaling, Virtualization, Virtual Machine, Cloud Computing.

Paper ID: 19

STUDY AND COMPARISON OF MALWARE DETECTION USING DEEP LEARNING TECHNIQUES

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Abstract : Improvements in computer technology have resulted in increasing virtual living, shifting the focus of cybercriminals to the online realm. Committing crimes online is easier, leading to the proliferation of malicious software (malware) for cyberattacks. Deep Learning (DL) is employed to enhance malware detection, offering efficient and precise detection without manual intervention. This study explores various DL approaches, comparing them with other methods and their own variations.

Keywords : Malware Detection, deep learning, DNN, CNN, CNN+LSTM

Paper ID : 20

NATURE-INSPIRED META-HEURISTIC ALGORITHMS FOR OPTIMIZING NEURAL NETWORK TRAINING: A FOCUS ON PARTICLE SWARM OPTIMIZATION AND FIREFLY ALGORITHM

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Abstract : Efficiency of Nature-Inspired Meta-heuristic Algorithms in training Simple Neural Networks (SNN), particularly Particle Swarm Optimization (PSO) and Firefly Algorithm (FFA), is explored in this paper. Traditional methods such as Back Propagation (BPN) are renowned for their high resource demands. An alternative approach is presented using PSO and FFA, both derivative-free and potentially more efficient for optimizing neural network training. Application of these algorithms to the IRIS dataset demonstrates their effectiveness in multi-level classifications. Comparative analysis with BPN reveals the strengths and limitations of PSO and FFA, emphasizing the significance of parameter selection in achieving optimal training results. Highlighting nature-inspired algorithms as viable alternatives for complex problem-solving in neural network training, this study contributes to the field.

Keywords : Particle Swarm Optimization (PSO), Firefly Algorithm (FFA), Neural Network Training, Meta-heuristic Optimization, Nature-Inspired Algorithms, Algorithmic Efficiency.

PCAFEEX: A MACHINE LEARNING-BASED CONCEPT FOR PREDICTING HEART DISEASE USING PRINCIPAL COMPONENT ANALYSIS FEATURE EXTRACTION

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Abstract. Early identification is crucial for successful and prompt medical intervention in the treatment of heart disease, which is a significant cause of death worldwide. Important healthcare service data is generated by this model by using PCA (Principal Component Analysis) as a feature extraction approach after preprocessing. Each disease dataset contains a large number of characteristics. The following machine learning (ML) algorithms are used to create a comparison model: LR (Logistic Regression), KNN (K-Nearest Neighbor), GBoost (Gradient Boosting), RF (Random Forest), and DT (Decision Tree). The dataset being compared includes features with and without the hyperparameter GridSearchCV as well as a significant number of features with sequential feature selection (SFS). An improved accuracies of 99.21% and 99.04% achieved with RF and KNN classifiers respectively accompanied by GridSearchCV utilizing PCA demonstrates encouraging performance results for the suggested approach. The findings show that when it comes to early heart disease prediction, using the strengths of many base classifiers works well. We outperform the other authors' suggested methods in terms of prediction accuracy. Our model was also compared to models developed by other authors as well.

Keywords: Comparison**,** feature extraction, hyperparameter, heart disease,preprocessing

EFFECTIVENESS OF SOSA, FFA AND GOA ALGORITHMS FOR EPILEPTIC SEIZURE DETECTION USING DWT AND SVM

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Abstract. Epilepsy is the unusual electrical signal flow in the brain that causes different varieties of seizures and affects the normal activities of a person. A lot of emphasis is put in the field of accurate epilepsy detection so that preventive steps can be taken to recover from the epilepsy. The machine electroencephalogram is now powered with deep learning techniques which are the integration of many meta-heuristic optimization techniques. From the statistics of research, it is found that nature-inspired techniques are almost used in the field of meta-heuristic optimization. With this observation, we work with three meta-heuristic search-based optimization techniques for epilepsy detection: symbiotic-organism search algorithm (SOSA), grasshopper optimization algorithm (GOA), and farmland fertility algorithm (FFA). For this experiment, the commonly used classifier is chosen known as Support Vector Machine (SVM) for feature classification and the experiment values are tested with publicly available CHB-MIT dataset. We obtained accuracy, sensitivity, specificity, positive predictive value and area-under curve value for all these three algorithms and the obtained values of these parameters for FFA are: 99.8%,99.35%,99.82%, 96.85% and 1 which proves that FFA is performing efficiently than SOSA and GOA. All the methods can be integrated with hybrid optimization techniques in future.

Keywords: Meta-heuristic search, sensitivity, SOSA, FFA,GOA, SVM

Paper ID: 30

A NOVEL APPROACH TO DETECT EPILEPTIC SEIZURE FROM EEG SIGNAL USING WPT AND LSSVM CLASSIFIER OPTIMIZED BY TUNICATE SWARM ALGORITHM

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Abstract. In neuro-science, epilepsy is treated as a critical brain disorder that generates abnormal symptoms called as seizure. The importance of this experimental study is to implement a new patient specific real time machine intelligence learning model to automate the complexity of epileptic seizure detection. Here we propose, a novel machine learning method which uses Tunicate Swarm Algorithm (TSA) to improve the global search capabilities. For decomposing signals and extracting the features, the integrated Wavelet Packet Transform (WPT) method and Kruskal-Wallis (KW) method is applied to choose the appropriate features. After it, the selected characteristics are imported to the classifier. Least- Square -Support-Vector- Machine (LSSVM) is chosen for separating seizure from non-seizure EEG signals. To validate the accuracy of our experiment, we have taken publicly available Bonn-University EEG datasets. The proposed WPT-TSA-LSSVM method achieved the highest accuracy (ACC) of 99.8% per C-E set and 99.67% for AB-CD-E set with AUC=1. The comparison results of proposed method with existing methods, confirm that the works of our proposed method is effective for proper medical diagnosis of epileptic seizure detection.

Keywords: WPT, LSSVM, Tunicate Swarm Algorithm, EEG Signal, Epileptic Seizure signals.

Paper ID: 31

ANTRAL GASTRITIS PRELIMINARY DIAGNOSIS BY ENDOSCOPIC IMAGE ANALYSIS USING DEEP LEARNING APPROACH

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Abstract. Diagnosis methods of diseases automatically are the need of the hour in the medical healthcare sector. For this purpose, artificial intelligence, machine learning and subfield like deep learning are profusely used to analyze different images produced in mammography, x-ray, magnetic resonance imaging, radiography, interventional radiography, ultrasound, angiography, echo-cardiograph, positron emission tomography and endoscopic imaging etc. Along with this, the amalgamation of explainable artificial intelligence is playing a pivotal role in the trustworthy prediction of various concerns of the diseases. Nowadays antral gastritis has become a common gastrointestinal problem faced by a significant amount of the population in the world. For the effective treatment of the patients, accurate diagnosis at the proper time can lead to solving this type of gastrointestinal problem. In this paper, we have approached to analyse preliminarily the endoscopic images of antral gastritis with the help of a convolutional neural network (CNN). This is the primary and most studied method among many deep learning methods. Such type of visual explanation methods can assist medical endoscopists in their diagnosis of various aspects of antral gastritis providing a direction from the very beginning of the process of treatment.

Keywords: Antral gastritis, Deep learning, Endoscopic image

DESIGN AND DEVELOPMENT OF PRIVACY PRESERVATION APPROACH IN DATA MINING USING MULTIVARIATE FRAMEWORK IN CONTINUOUS AND MULTI-DIMENSIONAL DATA

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Abstract : Data mining raises serious privacy issues. For the purpose of protecting privacy in data mining, techniques have been developed. Privacy-preserving data mining for multi-dimensional data sets, however, results in significant data loss, information leakage. An innovative method called Multidimensional Noise Additive Model (MNAM), which improves cluster identification and privacy while reducing information leakage, is suggested in this study. Anonymization technique that incorporates aggregation is applied in multi-dimensional data sets which leads to the reduction of information leakage and enhances the privacy. The domain-specific range of the subspaces are taken into consideration when performing noise addition. The MNAM method considers Euclidian distances among the neighbouring clusters. Then, anonymized subspaces are subjected to random noise inside the subspace domain to improve cluster detection and minimize data loss.

Keywords: Data Mining, MNAM, Data Loss, Privacy, Noise

VIRTUAL IGA-GRU: AN APPROACH FOR LOAD BALANCING IN CLOUD COMPUTING

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Abstract : In cloud computing, load balancing evenly allocates traffic and tasks to improve performance. We propose an intelligent genetic load balancing strategy for hybrid clouds in this paper. A genetic algorithm (GA) solves hybrid cloud load balancing problems, while a Gated Recurrent Unit (GRU) model classifies and ranks virtual machines. TensorFlow framework analysed the cloud environment and load balancer. The proposed approach achieved an average success index of 94%. The success rate of the suggested strategy has been compared to that of existing methodologies.

Keywords: Load Balancing, Gated Recurrent Unit, and Virtual Machine.

FUZZY LOGIC BASED USABILITY SUB-CHARACTERISTIC ANALYSIS FOR M-LEARNING APPLICATION UTILIZING GQM & ISO 9241-11

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Abstract : The concept of usability is used to evaluate the user experience and the general impression of mobile apps by customers. Considering the significance of the mobile learning industry, the usability requirement for mobile apps employed in this field is very crucial. This is due to the fact that mobile learning is a crucial industry. This research will conduct a quantitative analysis of the usability sub-characteristics. This information will be used to provide feedback to stakeholders, developers, and testers, as well as to aid in the analysis and understanding of the different qualities that exist among the sub-characteristics. The goal of this paper was to provide a design framework that was created to assess the usability of a mobile learning application utilizing fuzzy logic. The assessment is conducted to ensure user satisfaction and enhance the overall quality of the M-Learning application.

Keywords: Usability, M-Learning, GQM Approach, ISO 9241-11, Survey, Questionnaire.

ANALYTICAL STUDIES OF LOAD VARIATION ON TERMINAL VOLTAGE AND FREQUENCY OF THREE PHASE SYNCHRONOUS GENERATOR USING FRACTIONAL ORDER PI CONTROLLER

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Abstract : Mechanical energy is converted to AC electrical energy using synchronous generators or alternators. The alternator is synchronised onto a large interconnected grid thus operating in unison or in parallel with all other generators of the overall system supplying energy to all the loads connected to it. It is essential to study the effect of the load variations on the voltage magnitude and the frequency. This paper studies the effect of load variations on the voltage magnitude and the frequency of an isolated three phase synchronous generator using proportional-integral (PI) and fractional order PI (FOPI) controllers. The entire modelling of the PI and FOPI controllers and the three-phase synchronous machine has been done using MATLAB Simulink. The simulation has been done in MATLAB Simulink environment for both PI as well as FOPI controllers. It can be concluded from the simulation results obtained that the magnitude and frequency of the terminal voltage of the synchronous generator remain constant at their rated values irrespective of variation in connected load (both real power and reactive power) with less ripple in 'developed electrical torque' and 'rotor speed' in case of FOPI controllers. These simulation results show the proper functioning of the proposed PI and FOPI controllers.

Keywords: Three phase synchronous generator, PI controllers, FOPI controllers, MATLAB Simulink software, real power, reactive power.

BLOCKCHAIN SMART CONTRACT FORTIFICATION USING BYTECODE ANALYSIS TO ADDRESS VULNERABILITIES

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Abstract. Smart contracts and blockchain platforms have revolutionized various industries, offering decentralized and transparent execution of agreements. However, they are not immune to security lapses, and the presence of vulnerabilities has led to security issues. This fieldwork will leverage bytecode analysis, focusing on security implications by using bytecode analysis along with EVM opcodes to determine the potential vulnerabilities in a smart contract. By delving into the low-level instructions of smart contracts, we intend to present a detailed analysis of the vulnerabilities detected and provide essential insights wherever required to improve smart contract. To accomplish this, we will explore the case study that uses smart contract as a decentralized approach to electoral integrity. The approach combines automated analysis through tools and manual examination for inspection of bytecode. Overall, the key focus is inclined to have a concise view of what and how the vulnerabilities in smart contract can be checked through bytecode analysis. This research investigates the security of smart contracts using bytecode analysis. By examining low-level instructions and EVM opcodes, we aim to identify potential vulnerabilities and provide insights for improvement. We present a case study of a smart contract used for decentralized electoral integrity, combining automated tool analysis with manual bytecode inspection. This work seeks to offer a clear understanding of how bytecode analysis can be used to detect and mitigate vulnerabilities in smart contracts

Keywords: Smart Contracts, EVM Opcodes, Automated Analysis, Manual Examination, Vulnerability

FINGERS IDENTIFICATION ARCHITECTURE FOR AIR CANVAS: A CASE STUDY

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Abstract. The writing of content with the help of pen and paper has existed for a century. But with the development of new technologies, new methods can be invented. This paper is based on the gesture of finger movement. Suppose technology can sense the direction of the fingers. In this paper, OpenCV is applied to identify the movement of fingers. This paper aims to design and develop a system to draw anything on the screen. It is based on identifying the finger's movements and converts this motion to text. In recent years, few technologies have developed in this research area. This work uses computer vision to monitor finger movements. This detects our hand movements mainly and uses them for doing the task, i.e., without any touch or typing, the system will sense and interpret the same as a hand does automatically without any physical contact. This work tested finger movement from 5 to 10 fingers at different angles and tried to capture the action. It works fine to some extent, and with few modifications' efficiencies can be increased. In recent years, programming has moved towards Artificial Intelligence, and this concept is related to it. This is a concept that can be used for the development of the application in the coming years. It can be used to write text, operate systems, and perform tasks.

Keywords: Machine Learning, OpenCV, Air Canvas, Object detection, Artificial Intelligence

PERFORMANCE EVALUATION OF CLOUD WITH LOAD BALANCING ALGORITHMS

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Abstract. Cloud computing is the new emerging trend which contribute in process management and storage of huge amount of heterogeneous data. This needs efficient scheduling techniques for allocation of VMs and data centers. In this paper, cloud of extended cloudlets. This work is simulation of scheduling algorithm on cloud with different set of processors. Computational cost and response time are the parameter for comparison the performance of allocation of VMs to different cloudlet. It has been observed from the result that increasing the number of processor and apply efficient scheduling algorithm will successfully manage the distribution of cloudlet to VMs. Results of SJF scheduling is giving better result over the FCFS. The current trends of healthcare system requires the efficient scheduling algorithm to manage the modern system consist of historical data and data produced by IoT. In this paper, introduced the first phase of healthcare system for distribution of cloudlet to brokers.

Keywords: Cloud Computing, Load balancing, Scheduling Algorithm, FCFS, scalableSJF, Computational cost, Communication technology, CloudSim

AUTOMATION OF GENETIC DIAGNOSIS FOR DETECTING CHROMOZONE STRUCTURE

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Abstract. Chromosome is protein structure found inside nucleus where each cell has 23 pair of chromosomes. Every pair if well-structured is said as regular chromosomes. Many ways are approached to detect the structure of chromosomes. In this paper we are coming with new idea of adopting Yolo Technique in order to detect the normal chromosome structure. An attention-based model that will automatically learn to describe the content of the photos was just introduced. We also go over the deterministic and stochastic training methods we'll use for this model, including how we'll maximize the variation lower bound and take into account hyperparameters like Precision, Recall, and F1 to compare the results to the methods used to find the pair of chromosomes.

Keywords: Yolo, Hyper parameters, Chromosome.

EXPLORING CARDIAC DYNAMICS : AN INVESTIGATION OF MACHINE LEARNING APPROACHES IN HEART ATTACK PREDICTION

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Abstract : The heart is a complex organ, often prone to issues. While some individuals may experience significant injuries, certain portions of the heart may still be operational. However, the compromised state may hinder the heart's ability to pump blood adequately. Timely observation, appropriate care, and dietary adjustments can play a crucial role in minimizing or preventing potential complications following a heart attack or other injuries. This study employs numerous machine learning algorithms to assess the probability of a heart attack. These algorithms encompass logistic regression, Graphic Neural Network (GNN), light gradient boosting machine (light GBM), stacking CV classifier, Naive Bayes, Extreme gradient boost (XGB classifier), decision tree, K-nearest neighbors, support vector machine, and random forest classifier. The article explores different procedures, including the examination of correlation matrices, visualization of features, and analysis of the area under the curve (AUC). Notably, the findings indicate that the light GBM model emerges as a promising candidate, boasting an impressive 99% accuracy rate. This suggests its potential as the optimal model for predicting the probability of a heart attack.

Keywords: Decision Tree, GNN, Heart Attack Prediction, KNN, Logistic Regression, Light GBM, Machine Learning, Naive Bayes, Random Forest, Stacking CV and XGB

AN INVESTIGATION OF THE APPLICABILITY OF MACHINE LEARNING METHODS TO THE FORECASTING OF CARDIOVASCULAR DISEASE

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Abstract : Heart disease is recognized as one of the leading causes of mortality around the globe in the modern era. A greater degree of precision, perfection, and accuracy is required to predict heart illnesses. This is because even a little error may result in the death of an individual, and heart diseases are also related to several risk factors. To effectively address the issue, it is necessary to have a prediction system that can provide accurate and trustworthy information on illnesses. Machine learning offers a method for predicting any event by using training from natural occurrences as its source of information. Logistic Regression, K-nearest neighbours, Support Vector Machines, Decision Trees, and Random Forests are some of the supervised machine-learning classification methods we developed in this study. We have also calculated the accuracy of these algorithms by using pre-existing datasets from the Cleveland database of the University of California, Irvine repository of heart disease patients.

Keywords: KNN, Logistic Regression, Support Vector Machines, Decision Trees, and Random Forests

SIMULATION AND ANALYSIS OF POWER QUALITY IMPROVEMENT FLC BASED DVR FOR MITIGATING VOLTAGE SAGS IN GRID CONNECTED POWER SYSTEMS.

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Abstract : A dynamic voltage restorer (DVR) is a power conditioner belongs to the FACT device family. The concept of DVR developed to maintain an uninterrupted three-phase load voltage level under any sudden grid voltage distortion condition. Grid voltage distortion is a power quality (PQ) issue cause due to voltage sag, voltage swell, interruption and flickering. The requirement for electrical power increasing day by day due to rapid development of industry and their automation technology. The use of power semiconductor devices in the network and integration of green energy (GE) sources such as solar, wind energy enhance system reliability, but the system face some challenge in maintain the power quality and system stability. In order to compensate such trouble in recent era FACTS controller such as DVR, DSTATCOM etc. developed. The DVR play an active role in mitigating PQ issues. This research work proposed a test model, which deals with the protection of sensitive loads from power quality disturbances using a DVR. A control algorithm adapts soft computing logics i.e. a fuzzy logic controller proposed to generate a reference filter voltage to compensate the load voltage during any power quality issue. The proposed model and results simulated in MATLAB/SIMULINK environment and the performance of model verified.

Keywords. Power conditioner, PQ, sag, swell, FACTs devices, DVR, 3 phase faults, Fuzzy controller, voltage source inverter, Injection transformer, Harmonic reduction

Paper ID: 48
A COMPARATIVE ANALYSIS OF WORKING MEMORY DYNAMICS THROUGH EEG METHODOLOGY

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Abstract : Working memory is a fundamental cognitive system that plays a crucial role in a wide range of cognitive tasks. Electroencephalography (EEG) provides precise temporal resolution, allowing for the study of neural changes in working memory tasks. This study uses EEG data to observe brain activities linked to working memory and employs diverse experimental paradigms such as task manipulations, stimuli variations and analytic approaches. This comparative analysis focuses on key methodological aspects and emphasizes the value of EEG in studying cognitive processes.
Keywords: Working Memory (WM), Electroencephalography (EEG), cognitive processes

Paper ID : 53
ZERO FORCING CONDITIONING OF ENERGY EFFICIENCY IN A CONTEMPORARY QUASI-MASSIVE MIMO SYSTEM

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Abstract. This paper aims to optimize the energy efficiency in a quasi-massive MIMO system. Here, we have modified the number of active terminal users in the downlink and uplink as well as the number of antennas in the base station in comparison with massive MIMO system. We propose a new parameter for computation of energy-efficiency along with the already existing parameters. We have utilized Zero Forcing conditions for simulation in both multi-cell & single-cell scenario. Our simulation suggests maximization of the energy efficiency in both imperfect and perfect Channel State Information conditions. **Keywords:** CSI, energy efficiency, quasi-massive MIMO

Paper ID: 54
ENERGY EFFICIENT WIRELESS SENSOR NETWORKS USING SUPPORT VECTOR MACHINE

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Abstract : Energy-efficient wireless sensor networks (WSNs) are networks of interconnected sensor nodes that aim to minimize energy consumption while achieving their designated tasks, such as sensing, collecting, and transmitting data. These networks are typically deployed in environments where traditional wired infrastructure is impractical, such as remote locations, harsh environments, or areas where frequent movement is required. Energy-efficient WSNs aim to balance the trade-off between energy consumption and network performance, enabling long-term, autonomous operation in resource-constrained environments. The role of kernel functions in designing energy-efficient wireless sensor networks (WSNs) using Support Vector Machines (SVMs) lies primarily in optimizing the classification performance of the SVM model while considering the energy constraints of sensor nodes. Kernel functions in SVMs contribute to the design of energy-efficient WSNs by enabling accurate and efficient classification of sensor data, while also considering the resource constraints of sensor nodes. By selecting an appropriate kernel function and tuning its parameters, we can optimize the performance of SVM models in WSNs, leading to improved energy efficiency and overall network performance. In this paper different kernel functions are used to manage power utilization, temperature of different rooms in different time periods of smart home. In order to simulate a wireless sensor network, we have used the datasets of the smart home from the public data repository. According to our simulation results, the purposed model can be utilized to increase the lifespan of the wireless sensor network and achieve our objectives by utilizing the appropriate number of features and kernel functions of SVM. The rbf kernel function produces best result than other functions.
Keywords: WSN, SVM, Lifetime, Kernel functions, Dataset

POWER CONTROL OF A DOUBLY FED INDUCTION GENERATOR BASED WIND TURBINE USING BIO-INSPIRED ALGORITHM OPTIMIZED FUZZY LOGIC CONTROLLER

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Abstract : The integration of renewable energy sources, such as wind power, into electrical grid has gained significant attention to address the growing demand for clean and sustainable energy. Doubly Fed Induction Generator (DFIG) based wind turbines have emerged as a popular choice due to their variable speed of operation, four-quadrant power control, reduced power converter size and efficiency. However, effective power control of DFIG-based wind turbines is crucial for maximizing energy capture and maintaining system stability. Fuzzy logic controllers (FLCs) have emerged as a promising approach for power control due to their ability to handle nonlinearities and uncertainties inherent in wind turbine systems. But, traditional FLCs often suffer from limitations such as difficulty in optimizing fuzzy parameters and rule determination etc. This paper proposes a novel approach for power control of a DFIG-based wind turbine using bio-inspired algorithm optimized fuzzy logic controller. The proposed approach utilizes a bio-inspired algorithm, such as particle swarm optimization (PSO), to optimize the fuzzy parameters of the FLC. This optimization process aims to enhance the performance of FLC by errors in reference tracking and achieving optimal power control.
Keywords: wind turbine, DFIG, fuzzy logic controller, bio-inspired particle swarm optimization.

Implementation and Evaluation of Software Defined Wide Area Networking (SD-WAN) Infrastructure Using Cisco System Technologies

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Abstract : This paper describes how Software-Defined Wide Area Networking (SD-WAN) was implemented and tested using technology from Cisco. The research paper focuses on using SD-WAN solutions to simplify and streamline the operation of enterprise networks as the requirements change. The main goal is to evaluate how well the new infrastructure works in terms of its performance, its ability to handle growth, and how well it performs compared to the old WAN architecture like Multiprotocol label switching (MPLS). The evaluation process that was undertaken consisted of analyzing the network throughput and latency in addition to evaluating the user experience. Through this assessment, it was clear that the adoption of SD-WAN resulted in improved agility as well as reduced costs. The results show a significant increase in network performance, simple administration, and efficient utilization of resources. This research emphasizes the importance of Cisco SD-WAN technologies in enhancing network performance, which allows companies to remain competitive in the ever-changing networking scenario.
Key words: SD-WAN, MPLS, WAN, Network Performance

E-ENSEMBLE FOR DIAGNOSIS GENE EXPRESSION DATA USING HYBRID FEATURE SELECTION

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Abstract. DNA sequencing technology through leaps and bounds accumulating researches are used for gene DNA sequencing recognition. Genes are closely associated with diseases. They contain valuable information about the physiological states. These data are helpful in early diagnosis and prognosis types. It is found that mortality rate can be reduced to 90% with proper data analysis of gene expression datasets. Machine learning models can be one of the effective data analysis approach and like expert systems for disease diagnosis in health care centers for early detection Advanced ML methods, ensemble methods, expert systems are used for such health care issues. In this paper we have proposed such a robust extended ensemble ML model for medical benefits.

KeyWords: AltWOA, Blending, Ensemble Learning, Microarray, Stacking

PATH PLANNING OF AUTONOMOUS UNDERWATER VEHICLE IN SWIMMING POOL UNDER COMMUNICATION CONSTRAINTS

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Abstract : Path planning is an essential process of optimizing the trajectories and achieving the desired mission objective efficiently. It has various applications such as search and rescue (SAR), underwater mapping and exploration, military and defence. Path planning of AUV is a serious concern, whenever a stationary obstacle is present in real time environment. The successful deployment of an AUV in an assigned path encompasses different activities such as surveillance operations and monitoring the environment in presence of obstacles. In this study, the Dijkstra's algorithm is proposed to address the issue of path planning. The Dijkstra's algorithm is a popular method of finding the nearest distance between the waypoint along the desired path. It is often used in applications such as robotics, network routing, and transportation. The research mainly contributes in applying the Dijkstra's algorithm in resolving the path planning problem in presence of obstacles along with obtaining the shortest path. The work is carried out in MATLAB. The subsequent path is obtained in real-time and accordingly the outcomes of the simulation and the proposed method can resolve the issue of planning a path in a real time underwater environment.

Keywords: Autonomous Underwater Vehicle, Dijkstra's algorithm, Path planning, Local minima problem

Paper ID : 59
An Intelligent WBAN to Predict Cardiovascular Diseases

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Abstract : Accurate cardiovascular disease prediction is essential for treating cardiovascular patients effectively before a cardiac attack occurs. This aim may be accomplished with the sophisticated powerful machine learning framework and a wealth of healthcare data on cardiac disorders. Several machine learning-based algorithms for predicting and diagnosing cardiac disease have recently been demonstrated. Furthermore, existing systems use traditional approaches to choose characteristics from one dataset and assign an overall weight according to their relevance. These techniques have also been found to be ineffective in improving the accuracy of heart disease identification. The ensemble machine learning and feature fusion methodologies are used with an aim to develop an intelligent public healthcare system for the prediction of cardiac disease. To start, the feature extraction technique combines sensor- derived characteristics with electronic health records to give meaningful data on health care. Then, the knowledge addition acquisition strategy excludes duplicates with unneeded components and reduces load, and improves the performance of the system. Finally, a deep learning ensemble model was built to predict cardiovascular disease. The suggested strategy was compared to conventional classifiers known as feature fusion, extraction of features, and weighting methods using heart disease data. The recommended system has an accuracy of 89 %, which is higher than existing approaches. The proposed technique depicts supremacy over other cutting edge technologies for predicting cardiac diseases.

Keywords : Cardiovascular Disease, Heart Disease, Machine Learning, Data Fusion, IoT, Biosensors

Paper ID: 60
ONLINE AUCTION FRAUD DETECTION USING DEEP LEARNING NETWORK

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Abstract : This article introduces us to an unconventional approach to fraud detection in auctions and bids held online and on web-based platforms by applying kernel superposition in two different deep-learning models. Initially, the data preprocessing has been carried out in synchronization with the required ethics and parameters to help create two models that apply differential reasoning for the binary classification of 'Fraud' and 'Not Fraud' class labels. Afterward, two classification models were generated with underlying perceptron layers and one output layer. At last, the models are optimized by the Adam optimizer and the mean squared error loss function. The callback object stored the best model, prefixed with a patience value of 20 epochs. The efficiency of the proposed Deep Learning Models is evident from the generation of confusion matrices. Furthermore, a comparative analysis of these two proposed models has been shown to represent the best-performing model.

Keywords. Online Auction Claims, Fraud Detection, Deep Learning, Sequential Model, Functional Model

Paper ID : 61
ADVANCING MEDICAL DIAGNOSIS: AN IN-DEPTH EXPLORATION OF IMAGE PROCESSING TECHNIQUES FOR SWIFT AND ACCURATE DETECTION OF BRAIN TUMORS IN MAGNETIC RESONANCE IMAGING

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Abstract : Magnetic resonance imaging (MRI) represents a significant leap forward in medical technology, generating detailed, high-resolution images crucial for identifying and categorizing diseases within the body's organs. One such condition detectable through MRI scans is the presence of brain tumors. The utility of MRI technology is particularly pronounced in the quick observation of brain tumor diseases within the medical domain. However, the manual interpretation of MRI images by healthcare practitioners remains a bottleneck in the diagnostic process, mainly due to the intricate structure of the human brain. The extended duration required for the manual detection and classification of brain tumors from MRI images can result in delays in administering vital medical treatments crucial for a patient's recovery. Acknowledging the urgent need for swift and accurate medical information to guide timely interventions, there has been a concerted effort to develop image processing techniques tailored for the analysis of MRI images. The primary goal is to streamline the interpretation of medical images, especially those derived from MRI scans. This research aims to comprehensively examine a spectrum of techniques and methods like K-Nearest Neighbors, Artificial Neural Network, Convolution Neural Network and Residual Neural Network utilized in the identification of brain tumors within MRI images.

Keywords : Artificial Neural Network (ANN), Convolutional Neural Network (CNN) ,Deep learning, K-Nearest Neighbors (KNN), Machine learning, , and Residual Neural Network (Res-Net)

Paper ID: 64
COMPARATIVE ANALYSIS OF DEEP LEARNING ARCHITECTURES FOR MRI CLASSIFICATION

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Abstract. One of the most important procedures for diagnosing and treating various diseases is the utilization of MRI or Magnetic Resonance Imaging. Deep Learning (DL) techniques have significantly improved the accuracy of extracting meaningful information from medical images. In this paper, we conduct an in-depth comparative analysis of three popular deep learning architectures, namely VGG16, DenseNet121 andResNet50, to classify MRI images. Google's Teachable Machine has also been used as an accessible tool for comparison. The research guarantees the generalization and robustness of the model using a diverse dataset by encompassing a spectrum of medical conditions. For enhancing interoperability, attention mechanisms and salience maps are implemented, thus, shedding light on the decision-making processes of the models. This aspect is particularly critical in medical applications as it fosters trust. Transfer learning is achieved by the utilization of pre-trained models which are subjected to fine-tuning on the medical imaging datacard, and investigating its impact on model performance. Our

study aims to identify the most effective deep learning architectures for MRI classification, considering both classification metrics and interoperability in a clinical context. More accurate and efficient diagnoses based on MRI data are anticipated as outcomes of this research. Additionally, the comparative analysis sets the stage for future developments in deep learning techniques for medical image classification tasks by highlighting the role of accessible tools like Google's Teachable Machine in advancing medical imaging research, where the said tool provides a better accuracy than the other models used (VGG16, DenseNet and ResNet, given in order of decreasing accuracy).

Keywords: Deep Learning, Google's Teachable Machine, MRI Classification, ResNet50, VGG16

Paper ID: 66

RANKING OPTIMIZED STATISTICAL MODELS FOR TIME SERIES FORECASTING OF CRUDE OIL PRICE

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Abstract : Crude oil prices (COP) have historically led the global energy market, affecting economic growth, inflation, and general financial stability. To make informed decisions and reduce possible risks, governments, business stakeholders, and investors need reliable and precise forecasting of COP. Recently, hybrid models employing statistical and machine learning models have been extensively used for COP forecasting. Despite the use of statistical models in hybrid models to forecast COP, to date, no methodical research has been carried out to choose the suitable statistical model for a specific frequency (interval) of COP time series. Motivated by this, six foremost statistical models, including ARIMA, TBATS, ARFIMA, Theta, ETS, and Naive, have been optimized by the Forecast package of R and used to forecast the monthly, weekly, and daily COP time series. Five different split ratios, such as 90-10, 85-15, 80-20, 75-25, and 70-30 in train and test sets, are considered to make a reliable and robust assessment of the statistical models. The Friedman and Nemenyi hypothesis test is applied to the obtained performance measures from the five distinct splits to rank the models for forecasting the monthly, weekly, and daily COP independently and considering all. The simulation results indicate that the Naive, TBATS, and ARFIMA models are the best alternative to forecast the Daily, Weekly, and Monthly COP, respectively. Additionally, the TBATS model achieves the best overall rank in predicting monthly, weekly, and daily COP.

Keywords: Crude Oil Price Forecasting, Hybrid models, Optimized Statistical Model

ARDUINO UNO-BASED WOMEN SAFETY DEVICE WITH IOT

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Abstract : This paper introduces a smart security system called the women's safety device system is to increase women's safety. It serves as an alarm system as well as a security precaution. The gadget utilizes the Global Positioning System (GPS) to detect the victim's location and transmits it through the Global System for Mobile Communications (GSM). Additionally, Internet of Things (IoT)-based features simultaneously use the Wi-Fi ESP-32 module to transmit messages and an emergency email. This system focuses on such concerns where victims cannot discreetly reach their smartphones, offering an efficient security tool designed to empower women in awful circumstances. Unlike traditional approaches such as cumbersome belts, different clothing, or terrible smartphone applications our goal focuses to develop a smart, comfortable and adaptable gadget, prioritizing ease of use without compromising on functionality.
Keywords: Women Safety Device, GPS, GSM, IoT, Arduino Uno

RIVER POLLUTION DETECTION AND QUANTIFICATION WITH AERIAL IMAGERY USING YOLOV8.

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Abstract : River pollution is a pressing environmental concern with far-reaching implications for ecosystems, biodiversity, and human health. As pollutants, including plastic waste and chemical runoff, continue to infiltrate the water bodies, the need for effective monitoring and remediation approaches becomes paramount. The escalating issue of river pollution necessity innovative methods for detection and remediation. In response, this research introduces a methodology for river pollution detection utilizing drone imagery, YOLOv8 segmentation, and Canny edge detection. By leveraging drones equipped with high-resolution cameras, this research achieves accurate river segmentation and identifies plastic pollutants within the river environment. This approach holds immense promise for environmental monitoring, offering the ability to pinpoint polluted regions, trace pollution sources, and deploy drones for cleaning operations. The ongoing monitoring and maintenance facilitated by this methodology contribute to the conservation of river ecosystems and the preservation of aquatic life. As pollution challenges persist, this research paves the way for future interdisciplinary collaborations and global implementations, aiming to secure cleaner and healthier waterways.
Keywords : River-pollution, Drone, YOLOv8, Segmentation, Edge-detection

SURVEY ON DIVERSE ACCESS CONTROL TECHNIQUES IN CLOUD COMPUTING

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Abstract : With today's cloud computing technologies, Internet-based programs and services have provided the end user with some truly astounding advantages. Controlling access to resources is a vital topic for cloud users since a lack of control frequently poses security problems. Additionally, this might lead to system failure. In order to implement access control principles, access control systems must include a variety of characteristics. Instead of conducting the operations separately in various domains, these systems provide user features, or functions, which are suited for the procedures conducted, methodologies, and administrative characteristics. As a result, it is simple to establish the systems' priorities. Additionally, it is likely to carry out the processes for accepting or rejecting the prioritized tasks in accordance with a customary of guidelines. In this chapter, the access control techniques in cloud computing are categorized into 4 types:

1. Traditional Approaches, 2. Extended Approaches, 3. Encryption Based Approaches,
4. Fine Grained Based Approaches.

Key words : Cloud Computing, Cloud users, prioritized tasks

A MATHEMATICAL MODELING APPROACH FOR CUSTOMIZED ROBOT IN SMART MANUFACTURING

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Abstract : This research presents a novel mathematical modeling approach tailored for customized robots in the smart manufacturing industry, with a primary focus on kinematic analysis. The study aims to address the specific challenges associated with integrating robots into dynamic manufacturing processes. The scope encompasses the formulation of a comprehensive mathematical model that considers various degrees of freedom and operational constraints, ensuring adaptability and precision. The objectives include the development of a robust model, assessment of its performance through simulation and experimentation, and insights into optimizing customized robotic systems for enhanced efficiency. The novelty lies in the tailored kinematic analysis, integration of adaptability factors, and validation through simulation model, collectively contributing to the advancement of customized robots within the Industry 4.0 landscape.

Keywords: Mathematical Modeling, Customized Robots, Smart Manufacturing, Kinematic Analysis, Adaptability and Precision, Industry 4.0 Advancements

PRECISION CARDIO CARE: UNVEILING THE POWER OF MACHINE LEARNING MODELS FOR CARDIOVASCULAR RISK PREDICTION

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Abstract : Cardiovascular diseases have emerged as a leading cause of mortality worldwide, necessitating advanced predictive models for timely identification and intervention. This research delves into the efficacy of three prominent machine learning algorithms—Naive Bayes, Random Forest, and Sequential Minimal Optimization (SMO)—to classify the risk of heart attacks. The dataset, comprising 1320 records, is sourced from the Kaggle dataset repository. Utilizing a voting ensemble approach, our study aimed to leverage the collective predictive power of these models. Notably, the Random Forest algorithm emerged as the most promising candidate for heart disease classification, exhibiting an impressive overall accuracy of 98.71%. This result underscores the robustness of Random Forest in identifying complex patterns within the dataset, positioning it as a compelling choice for predictive modeling in cardiovascular health. Conversely, Naive Bayes demonstrated a moderate accuracy of 68.23%, indicating limitations in capturing nuanced relationships within the data. Similarly, Sequential Minimal Optimization achieved an accuracy of 71.34%, positioning it between Naive Bayes and the superior Random Forest model. Our findings strongly advocate for the adoption of Random Forest as the preferred model for heart disease prediction due to its exceptional accuracy. This research holds significant implications for the medical field, where early identification of individuals at risk of heart attacks can substantially impact preventive healthcare measures. As machine learning continues to evolve within healthcare analytics, our study provides valuable insights into the comparative performance of popular algorithms, aiding practitioners in making informed choices for heart disease prediction models.

Keywords: Machine Learning, SMO, NB, RF, Heart Disease Detection

DESIGN AND IMPLEMENTATION OF VITERBI DECODER USING VERILOG HDL

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Abstract : Wireless data transmissions encounter various challenges, including distortion, interference, and noise. To address these issues, Convolutional Encoding coupled with Viterbi Decoding stands out as a widely embraced technique for robust forward error detection and correction, especially in scenarios influenced by additive white Gaussian noise (AWGN). The process of viterbi decoding, known for its effectiveness, encounters challenges when dealing with smaller constraint lengths. In this endeavor, we harness the acclaimed Convolutional codes can be decoded using the maximum-likelihood Viterbi Algorithm. Our primary objective revolves around implementing a proficient Viterbi Decoder with Length Constraint set at 3 and a code rate of ½. The chosen hardware for this task is the Spartan-6 XC6SLX16-3CSG324 Field-Programmable Gate Array (FPGA). The architecture of our proposed Viterbi Decoder is materialized using the Verilog Hardware Description Language (HDL) and executed on a Spartan-6 FPGA board. This work highlights the practical implementation of a Viterbi Decoder and Convolutional Encoder with a code rate (k/n) of ½ and a constraint length (K) of 3. This is achieved by using FPGA technology. With the aid of Xilinx ISE 14.7, the implemented Viterbi decoder's performance is examined. and ModelSim tools for synthesis and simulation, respectively. The Viterbi decoder is specifically tailored for hardware realization on a Xilinx XC6SLX16-3CSG324 FPGA device.

Keywords: Convolution Encoder, HDL, Viterbi Decoder, AWGN, FPGA

ENHANCING ENVIRONMENTAL IMPACT ASSESSMENTS FOR SUSTAINABLE DEVELOPMENT : A MACHINE LEARNING APPROACH

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Abstract : The growing concerns surrounding environmental degradation and the imperative for sustainable development have brought about a significant paradigm shift in the methodologies employed in Environmental Impact Assessments (EIAs). This research paper investigates applying Machine Learning (ML) methodologies to Environmental Impact Assessments (EIAs) to improve their precision, productivity, and overall efficacy in pursuing sustainable development. By conducting an extensive review of pertinent scholarly works, case studies, and emergent patterns, this paper aims to clarify the possible advantages and obstacles that may arise from integrating machine learning into the EIA procedure. The subtopics that have been identified encompass the pre-processing of data predictive modeling, decision support systems, and the ethical implications that arise from the convergence of technology and environmental preservation. In conclusion, this study proposes that environmental science and state-of-the-art ML methodologies work in tandem to foster a more sustainable and resilient future through harmonious collaboration.

Keywords : Environmental Impact Assessment, Sustainable Development, Machine Learning, Predictive Modeling, Decision Support Systems, Environmental Conservation.

Unveiling Deception: Safeguarding Supply Chain IoT from DataFraudulence with Context-Aware Deep Learning

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Abstract : With the increasing integration of Internet of Things (IoT) devices in the supply chain,businesses have gained unprecedented visibility and efficiency. However theemergence of false alarms and data falsification in this IoT landscape has become aformidable peril. This menace extends beyond financial ramifications, casting a shadowof significant security risks. Particularly in critical fields such as vaccine supply chain inhealthcare sector, the implications can escalate to catastrophic levels, even resulting inthe loss of human lives. To tackle this pressing issue, this research presents aninnovative context-based approach, meticulously designed to accurately and efficientlyidentify instances of data falsification. It has used hierarchical clustering algorithm todefine the context of an object. Then context information is converted torepresentational vector using auto-encoder feature engineering method. Finally LSTMbased multi-layered deep learning technique has been used to detect the data falsification. Proposed method has been validated by implementing the algorithm usingtwo large dataset.

Keywords : IoT; Anomaly; Neural Network; Data falsification; Supply Chain; Big Data Analytic.

ULTRASONIC COMMUNICATION USING ASK MODULATION AND DEMODULATION TECHNIQUE FOR IMPLANTED SENSOR IN WIRELESS BODY AREA NETWORK

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Abstract : Radiofrequency is the main choice to transmit data for wireless body area network devices due to its wide range of spectrum, distance, and penetration capability in different obstacles or mediums. It is versatile in supporting different communication protocols. It is also reliable, scalable, and costeffective. Ultrasonic communication has less adverse effects on the skin and body and whole systems are also suitable for transmitting information with short- and medium-range security. Though this transducer transmits data with a short range and narrow bandwidth, different digital modulation and demodulation techniques can be implemented at both the transmitter and receiver side to achieve a good BER and signal-to-noise ratio to enhance the performance of the system. In this paper, an ultrasonic transducer with amplitude shift keying (ASK) modulation and demodulation techniques for wireless communication is simulated. The sensing data is taken from a Galvanic skin response sensor implanted on a human body to the ultrasonic trans-receiver system followed by ASK modulation and demodulation process.

Keywords : Ultrasonic Communication, ASK Modulation and Demodulation, GSR sensor, Ultrasonic Transducer, WBAN, NFC

HARMONY IN HARVEST: MACHINE LEARNING'S SYMPHONY FOR SUSTAINABLE AGRICULTURE

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Abstract : Global population increase and food scarcity are the two biggest obstacles to sustainable development. Machine learning's role in revolutionizing agriculture by predicting optimal crop types. Using a dataset comprising 2200 observations encompassing key agricultural parameters — soil nutrient levels (N, P, K), environmental factors (temperature, humidity, rainfall), and pH—four distinct machine learning models (Random Forest, Light Gradient Boosting Machine, Naive Bayes, Decision Stump) were evaluated to forecast suitable crop types based on specific environmental and soil conditions. Results showcased varying accuracies: Random Forest led with 91.23%, followed closely by Light Gradient Boosting Machine at 92%, and Naive Bayes with an impressive 96.2%. In contrast, the simpler Decision Stump model exhibited a lower accuracy of 36.36%. These findings highlight the superiority of complex ensemble methods like Random Forest and Light Gradient Boosting Machine in comprehending intricate relationships between soil composition, environmental dynamics, and crop suitability without sacrificing accuracy. This analysis emphasizes machine learning's potential to transform agricultural decision-making. By leveraging these models and existing data, predicting the most suitable crop types for specific environmental conditions becomes a valuable tool for farmers. This predictive approach promises to optimize agricultural productivity, resource management, and overall farm profitability.

Keywords: Smart farming, Machine learning, Crop prediction, Soil analysis, Environmental factors, NB, LMT, DS and RF.

EFFICIENT FOG TASK SCHEDULING USING HUMMING BIRD BASED TASK ASSIGNMENT

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Abstract : With gradual evolution of computing power, the cloud is capable of solving multiple complex problem parallelly. With faster innovation in telecommunication and IOT the number of service requests increased exponentially. In order to solve issues like slow response time & high latency, one intermediate network is developed, which is named FOG. FOG computing is an add-on to the cloud architecture, which manages all tasks with low computing resource requirements. Generally, FOG task scheduling deals with three operations task uploading, task assignment, and task management. First FOG will upload the tasks, with high computing resource requirements, to the cloud. Then the remaining task will be assigned to a particular virtual machine of FOG based on requirement of different computing resources like memory, processing speed, etc. Then finally task management will be done within each virtual machine during processing. A novel task scheduling algorithm, which integrates a hummingbird-based task assigning mechanism, has been proposed. An empirical comparison is conducted between the performance of the proposed algorithm and persisting bio-inspired algorithms typically used in FOG. The results of our approach presented in this paper demonstrate improved performance in terms of make-span and memory usage.

Keywords: Fog computing, task scheduling, humming bird, optimization, bio-inspired

Paper ID: 93

EFFICIENT WATERMARKING FRAMEWORK USING CRYPTOGRAPHY AND BIT SUBSTITUTION

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Abstract. This article suggests an encryption-based digital watermarking model for securing a message inside carrier data. The watermark is ciphered initially by a symmetric key cryptography mechanism. The XOR operation modifies the encrypted watermark's pixel bits with that of the host image. The least significant bits of the original image are substituted by the encrypted watermark pixel bits to hide the watermark. The watermark is then extracted and decoded with the help of bit substitution and symmetric key decryption. Experiments are carried out to evaluate the model's efficacy regarding different performance factors. The proposed scheme produces high-quality encrypted images and a reasonable payload factor. Further, a performance comparison with other existing approaches establishes the supremacy of the developed system.

Keywords: Watermarking, Message Security, Pixel Encryption and Decryption, Bit Operation, Substitution

Paper ID: 94

ANALYZING THE EFFECTIVENESS OF MACHINE LEARNING ALGORITHMS IN DETECTING FAKE NEWS

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Abstract. Fake news is widely available on social media and in other media channels, which poses a serious danger to society and has the potential to cause great social and national damage. The primary objective is to create a supervised machine learning system that can tell the difference between authentic and misleading news reports. The suggested method applies natural language processing (NLP) methods for textual analysis, such as feature extraction and vectorization, and does so by using Python's scikit-learn module. The work recommends using scikit-learn's Count Vectorizer and Tfidf Vectorizer for preparing text data. Feature selection techniques are also investigated in order to maximize accuracy. In social media, where there is a great deal of room for misinformation, machine learning presents a promising means of thwarting bogus news. The dissemination of misinformation and false narratives is made possible by social media's lack of users and post verification. Acknowledging that bogus news cannot be identified by human action alone. The method uses a Random Forest classification algorithm to determine if a post is authentic or not, and suggestions for improvement are provided. Various text representation strategies are used in the research to test machine learning and deep learning models. On two independent datasets, a brand-new stacking model achieves great accuracy rates. The study piece emphasizes how urgent it is to solve the problem of false news and shows how machine learning might help with this effort. From the experimental analysis Naïve Bayes and Random Forest Algorithm perform better than other algorithms. It investigates numerous approaches and models and produces encouraging findings that have the potential to dramatically lessen the negative effects of false news on society and politics.

Keywords: Machine Learning, Fake News Classification, Detection, Fact-Checking, Semantic Analysis

ANALYZING THE MACHINE LEARNING APPROACHES IN PREDICTING THE CROP YIELD: A DECADE LITERATURE REVIEW

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Abstract. Agriculture is a key sector that generates income and provides a means of livelihood in the world. The agricultural yields are influenced by a variety of financial, seasonal, and biological factors; however, unanticipated changes in these variables lead to a significant loss of crops. These risks may be evaluated when suitable statistical or mathematical methods are used to analyze data on past yield, climatic factors, and soil quality. With the development of machine learning, it will be possible to predict agricultural yields by obtaining useful data from crop fields. This would enable farmers to concentrate on the crops they wish to grow in the upcoming season in order to reap substantial advantages. Machine learning (ML) is a significant tool for decision support. It can help with choices about which plants to grow and what to do while the crops are growing. Research on yield prediction has benefited from the application of several ML techniques. The present investigation involved a Systematic Literature Review (SLR) aimed at extracting the techniques and characteristics utilized in previous research on crop yield prediction.

Keywords: Machine Learning, Crop Yield, Classification, Prediction, Agriculture

BCVIT: A VISION TRANSFORMER ENABLED DEEP LEARNING MODEL FOR BREST CANCER IDENTIFICATION

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Abstract. The complex task of BC diagnosis has sparked a revolution in the field of artificial intelligence. Clinicians can save time and effort with the use of artificial intelligence (AI) when it comes to cancer detection. With this ground-breaking approach, healthcare systems may work more efficiently, leading to greater results for patients. This research takes a technical approach to BC detection by combining the architectures of Vision Transformer (ViT) and Convolutional Neural Network (CNN) with breast-ultrasound images. Due to the complexity of BC diagnosis, cutting-edge methods are being sought, and AI is at the forefront of these efforts. To thoroughly examine BC datasets, we explore the possibilities of ViT and CNN architectures, as opposed to conventional machine learning methods. The findings demonstrate the effectiveness of our customized methodology, with the Vision Transformer achieving an impressive 95% classification accuracy and the CNN achieving 92%. Vision Transformer's ability to learn hierarchical representations and Convolutional Neural Networks' local feature extraction prowess are combined in this technological combination. Combining these designs has the dual benefit of improving diagnostic accuracy and highlighting the promise of deep learning approaches for revealing hidden patterns in BC data. This study is a significant step forward in the field of BC detection methods. We demonstrate the efficacy of customized deep learning architectures by avoiding conventional machine learning models, which should lead to improved AI-driven BC detection tools in the future.

Keywords: Artificial intelligence, Breast cancer, Deep learning, Convolutional neural network, Vision transformers.

Enhancing Watermark Detection in Digital Media Ownership Protection through Hamming Coding

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Abstract. Currently Digital watermarking plays a crucial role in ensuring the authenticity and integrity of digital multimedia content. This paper presents a novel method for watermark embedding and extraction utilizing Integer Wavelet Transform (IWT) and Hamming code encoding. The proposed technique partitions the cover image into sub-bands using IWT, further enhancing its robustness by embedding encoded text watermarks into higher coefficients. During embedding, Hamming code is employed to encode the text, allowing for error correction and efficient extraction. The process involves converting the text into binary form, applying Hamming code, and embedding it into the cover image. The method's effectiveness is evaluated through Peak Signal-to-Noise Ratio (PSNR) and Bit Error Rate (BER). Experimental results demonstrate the proposed technique's ability to accurately embed and extract watermarks while maintaining high image quality. Figures illustrating the application and extraction process provide a comprehensive overview of the proposed approach's efficacy and potential applications in digital content protection.

Keywords: Error correction, Hamming Coding, IWT, Watermark detection, Reversibility.

STRUCTURAL INTEGRITY PRESERVATION THROUGH DIGITAL WATERMARKING USING DUAL DECOMPOSITION TECHNIQUES

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Abstract. In the contemporary digital landscape where image sharing is integral to communication and collaboration, ensuring the privacy and integrity of shared images is paramount. This paper addresses the crucial need for robust and secure digital image watermarking techniques to safeguard images against unauthorized use, tampering, and distribution. The proposed approach focuses on securing image privacy through advanced techniques, employing the Discrete Cosine Transform (DCT), Quaternion Singular Value Decomposition (QSVD), and Schur Decomposition. DCT excels in the frequency domain, while QSVD introduces a sophisticated approach using quaternion matrices, and Schur Decomposition enhances security and imperceptibility. The amalgamation of these techniques aims to revolutionize digital image watermarking, contributing to the advancement of image privacy and protection. The motivation stems from the urgent necessity to confront challenges in the interconnected environment, addressing threats of unauthorized replication and dissemination. The primary objectives include enhancing security, ensuring imperceptibility, increasing capacity for diverse sharing scenarios, and preserving structure with computational efficiency. This paper delves into the strengths of each technique, emphasizing their combined potential to offer a robust solution for secure image sharing in the evolving digital era.

Keywords: Digital Image Watermarking, Image Privacy, Discrete Cosine Transform (DCT), Quaternion Singular Value Decomposition (QSVD), Schur Decomposition, Imperceptibility

IOT ENABLED GREEN HOUSE ENVIRONMENT AUTOMATION

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Abstract. Agriculture helps in the overall development of a nation. Due to global warming and climatic change, crop yields are deteriorating. To overcome the problem of climatic change, greenhouses come into the picture. A greenhouse is an enclosed structure that provides a suitable environment for ideal crop growth. Due to poor monitoring and human error in the greenhouse, a decline in crop production is observed. An automated greenhouse monitoring system using IoT technology can be ideal to overcome losses and boost crop production. In this system, four kinds of weather data temperature, soil moisture, humidity, and light intensity are collected by respective sensors. The collected data is then uploaded to the Arduino Cloud. These data are compared with threshold values, and actuators act accordingly. The Arduino Cloud allows the end user to monitor the collected data in real-time with the Arduino Remote IoT mobile app or its website. The internet is vulnerable to cyber attacks; therefore, our system consists of an attack detection mechanism to detect potential attacks on the network and ensure secure data transfer.

Keywords: Arduino Cloud, IoT, Agriculture, ESP32 Wroom, Sustainability, DoS.

RESTAURANT RECOMMENDATION SYSTEM UTILISING USER PREFERENCES WITH CONTENT-BASED FILTERING

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Abstract. In the rapidly evolving landscape of the restaurant industry, this research paper introduces a pioneering User preferences based restaurant recommendation system. The system seeks to transform the restaurant discovery experience by utilizing sophisticated content filtering algorithms, semantic analysis, and cutting-edge vectorization technique like TF-IDF Vectorizer. The main goal is to improve the

accuracy and customization of suggestions by smoothly integrating internet reviews and regional preferences.Semantic analysis is used by the system to find eateries with similar attributes and ratings, so suggestions closely match customer preferences. In addition, the algorithm is made to offer customized recommendations depending on location information entered by the user. This restaurant recommendation system recognizes user-input restaurant names, proposes alternatives that are comparable, and guarantees accurate, contextually appropriate recommendations by utilizing sophisticated vectorization techniques and natural language processing. It makes a substantial contribution to restaurant recommendation systems by seamlessly merging geographical preferences with semantic analysis, which promises improved customer satisfaction and user experience.

Keyword: Machine Learning Algorithm, Recommendation System, NLP, Content-Based Filtering, Cosine Similarity

CANCER PREDICTION USING DATA MINING TECHNIQUES

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Abstract. The objective is to create a cancer prediction system by applying the logistic regression "Cancer Prediction Using Data Mining Techniques," which is used to create a cancer prediction system by applying the logistic regression technique. The use of data mining methods for a specially created dataset is the primary goal. Improving the accuracy of the dataset's percentage utilized to forecast breast, lung, and cervical cancer is the main goal of this study. This model's workflow incorporates data mining techniques including logistic regression and decision trees with a proprietary dataset that has been rigorously chosen to contain a wide range of symptoms and behaviors. The training procedure uses neural network architecture to improve performance and achieve high face detection accuracy. An application has been developed to demonstrate the system's functionality and usefulness.

Key words: Datamining techniques, accuracy, regression

EXPLORING THE UNDERLYING PATTERNS AND RELATIONSHIPS BETWEEN TEMPERATURE AND HEAVY RAINFALL EVENTS OVER WESTERN JAPAN

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Abstract: In this study, we explore the underlying patterns and relationships between temperature and heavy rainfall events using exploratory data analysis techniques to anticipate the rate provided by the Clausius-Clapeyron relationship, which is defined as approximately a 7% increase in moisture holding capacity per degree rise in temperature. Despite the absence of a universal trend of increasing heavy rainfall events globally, we focus on specific events in western Japan. Our analysis involves collecting data on precipitation intensities and temperatures at each impacted grid point during two flood events. Our results confirm a CC-like relationship pattern between temperature and precipitation during the flood events, notably up to a temperature threshold of 22°C. Interestingly, beyond this threshold, precipitation intensity starts to diminish. We hypothesize that this downtrend could be attributed to insufficient moisture availability at higher temperatures. Overall, our analysis offers valuable insights into the intricate dynamics of heavy rainfall events within the framework of climate change relationships, underscoring the nuanced influence of temperature on precipitation trends.

Keywords: Clausius-Clapeyron relationship, Heavy rainfall event, Temperature-precipitation relationship

Paper ID: 124

ANCIENT HYDROLOGICAL WATER IMBALANCE DUE TO CLIMATE CHANGE IMPACT: THE PANNONIAN SEA

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Abstract. Five million years ago, the Pannonian Sea (PS) evaporated and dried its basin. Likely, a large-scale hydrological water imbalance has occurred and caused the PS to evaporate over the tipping point of its recovery abilities. Our work is one of pioneering studies with a goal to reconstruct historical hydrology, a new discipline with few past studies (i.e., by Keith Beven). To our knowledge, no other study conducted a large-scale hydrological simulation of the PS. Our objectives are reconstruction and assessment of the PS's hydrological cycle during the ancient climate change period, with special focus on its water imbalance. We propose joint hydrological (H08) and hydrodynamic (ROMS) framework, making a bridge between two distant spheres. We assume that excessive evaporation due to warming climate dried the PS. The authors believe that it will encourage broader scientific audience to engage in trans-disciplinary hydrological and related studies by providing insights in historical engineering and scientific knowledge. While there are a lot of present-day scientific efforts focused on projection, prediction and forecasting of near-future or far-future scenarios, historical studies are often sidelined. If only scientific community realizes that, sometimes at tipping points of climate, we can learn from past more than from future. With such mindsets, the authors believe that the historical cross-disciplinary insights create abundance of new approaches and cutting-edge solutions for present warming climate by learning from past.

Keywords: Historical hydrology and hydrodynamics, Paleoclimate change, Reconstructing past, Understanding present, H08 and ROMS models, Tipping point, Cutting-edge solutions

INTEGRATING ANALYTICAL HIERARCHY PROCESS (AHP) TO ASSESS LAND SUITABILITY FOR PADDY CULTIVATION: A CASE STUDY OF SUPHANBURI PROVINCE, THAILAND

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Abstract : This study presents a comprehensive approach to area suitability classification for paddy cultivation in Suphanburi Province of Thailand, using the Analytical Hierarchy Process (AHP). Integrating AHP into are suitability assessment provides a systematic framework for decision-making by considering various factors and their relative importance. The methodology comprises three major steps: factor selection, criteria weighting, and suitability mapping. A total of five parameters including land use, annual rainfall, soil pH, slope, and soil texture were selected based on their significance in rice production. These different geospatial data layers were analyzed separately using a pair-wise comparison matrix provided by Saaty's 1 to 9-point scale for assigning the weights for each factor to develop a final area suitability model for rice cultivation. The results show that the central part of the province is mostly suitable for rice cultivation, whereas the north-west part is unsuitable for rice cultivation. Only 42% of the total area was found to be the most suitable area for Paddy cultivation in the Suphanburi province, whereas 34% of the land is moderately suitable and 14% is marginally suitable for paddy cultivation. Therefore, paddy cultivation should be expanded by bringing moderately suitable land (34%) into consideration by adopting different irrigation, where water bodies have shown an increasing trend in Suphanburi. This AHP-based methodology provides a versatile and reliable method for assessing land suitability that may be extended to other geographies and crops with similar challenges.

Keywords: Land suitability modelling, AHP, Rice production, Suphanburi, Food security

SOLAR RADIATION FLUX TRENDS OVER INDIA USING REGIONAL CLIMATE MODEL: ASSESSING PRESENT AND FUTURE SCENARIOS FOR RENEWABLE ENERGY PERSPECTIVES

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Abstract. This study investigates solar radiation flux patterns using the Regional Climate Model (RegCM) across a temporal spectrum, including the reference period of 1975-2005 and projections into the near future (2040-2060) and far future (2080-2100). Focused on annual seasons, our analysis includes

model validation against ERA5 reanalysis data. The validation involves a comparative analysis of RegCM-simulated 2m temperature (T2M), total cloud cover (TCC), and surface downward shortwave radiation flux (FRSA) against ERA5 observations. Spatial correlations between RegCM-simulated climate fields are explored, specifically highlighting the relationships between 2m temperature and cloud cover, as well as 2m temperature and FRSA. Detailed examinations of RegCM-simulated 2m temperature, cloud cover, and FRSA provide insights into the model's performance in capturing solar radiation flux dynamics. This research not only contributes to a comprehensive understanding of RegCM4.3's suitability for studying solar radiation in present and future climate scenarios but also has implications for renewable energy. By identifying potential areas with favorable solar radiation flux trends, this study lays the groundwork for exploring solar energy potential and supporting renewable energy initiatives. Such insights are valuable for policymakers and researchers engaged in climate modeling, energy planning, and sustainable development efforts.

Keywords: RegCM, Climate Change, Solar Radiation Flux, Climate Modeling, Renewable Energy

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Water quality Analysis using Intelligent Framework
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Abstract - Water, a fundamental element for life on Earth, faces significant challenges due to population growth and industrialization leading to increased pollution of water resources. The discharge of chemicals into water bodies poses severe threats to human health and the environment. Efficient methods for accurately estimating water quality are essential for mitigating these risks. This research focuses on using machine learning approaches to estimate water quality, with different parameters. Various supervised classification algorithms including Regression, Support Vector Machine (SVM), Decision Tree, K-Nearest Neighbour (K-NN), and Random Forest were implemented. The study aims to identify the optimal algorithm for water quality prediction. Through analysis and comparison of historical data, machine learning models demonstrate the ability to predict future pollutant levels with
high accuracy. Statistical methods are employed to measure the accuracy of predictions and compare performance among different models. The findings indicate the proposed approach's viability for water quality prediction, offering valuable insights for monitoring and managing water resources effectively.

Keywords: Machine learning, Water pollution, prediction, data analytics, decision making, water quality