

2024 2nd International Conference on Computing and Data Analytics (ICCDA 2024)

**Shinas, Oman
12-13 November 2024**



**IEEE Catalog Number: CFP240B6-POD
ISBN: 979-8-3315-4258-0**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP240B6-POD
ISBN (Print-On-Demand):	979-8-3315-4258-0
ISBN (Online):	979-8-3315-4257-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Quickserve: A Mobile App for Enhancing Restaurant Efficiency	1
<i>Ammar Al Yahyaai, Nahiyan Al Bulashi, Abir Alsieiri, Shihab Al Balushi, Ali Al Shamsi, Mohammed Waleed Omer, Hamad Al Jneibi</i>	
A Novel Technique for Brain Tumour Detection Using IMADO.....	6
<i>A. Anand Selvakumar, P. Thangaraju</i>	
Integrating Sentiment Analysis to Enhance Mental Health Support Chatbots	13
<i>Senju Murase, Jarutas Andritsch</i>	
Optimal Logistic Map with DNA Computing Model for Image Encryption.....	19
<i>Shiny K. V, Wilfred Blessing N. R, Jino R, Suresh Palarimath, Mathumitha V, Sutherlin Subitha G</i>	
A Comprehensive Analysis of Alcohol-Attributed Mortality in the United States	25
<i>Deborah Adedigba, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Blockchain-Based Ensemble Deep Learning Model Technique for Breast Cancer Classification.....	31
<i>Hakima Rym Rahal, Sihem Slatnia, Okba Kazar, Saad Harous</i>	
Machine Learning Approaches for Obesity Classification and Prediction: An Analysis of Demographic, Lifestyle, and Health Factors	37
<i>Joel Azu, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Enhancing Cybersecurity Decision Support Systems: Integrating BERT to Address Human Vulnerabilities and Dynamic Threats	42
<i>Hamza Israr, Ch. Anwar Ul Hassan, Fawad Salman Khan, Saddam Hussain, Jawaid Iqbal, Aman Ullah Yasin</i>	
A Framework for Handling Scalability in Requirements Prioritization Using IMPA Algorithm for Large Scale Projects	48
<i>Aisha Tanveer, Noraini Binti Ibrahim, Muhammad Zubair Rehman, Nazri Mohd. Nawi</i>	
Fossil_Net Lung Cancer Prediction and Classification from CT Images Using Convolution Neural Networks	53
<i>V. Deepa, Merlin Christo F</i>	
Effective Cyber Threat Detection Through Machine Learning Algorithms	58
<i>Muhammad Adnan Aslam, Ch. Anwar Ul Hassan</i>	
Hardware Complexity Reduction of Polar Encoder Architecture for 5G Technology.....	64
<i>Tr. Parthasarathy, N. R. Krishnamoorthy</i>	
Artificial Intelligence in the Future of Mocobot Camera in Film Making and Camera Control by Voice Command	69
<i>Vijeya Sarathi. Rs, Surya A. S, Tarun. M, Merlin Christo. F</i>	
Exploratory Data Analysis and Data Visualization on Accidental Drug Related Deaths	78
<i>Ezinne Ogwo-Ude, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Enhancing Mathematics Education with ChatGPT-4 Personalized Problem-Solving and Consistent Learning	84
<i>Ikhlaq Chohan, Ijaz Khan</i>	

Future Prospects of Bio-Inspired Algorithms Based ML/DL Models in Healthcare	90
<i>Cynthia T, Deepa. V. Jose</i>	
Leveraging ChatGPT-4 for Enhanced Education: Personalized Problem-Solving and Consistent Learning	96
<i>Ijaz Khan, Ikhtlaq Chohan, Sohail Iqbal Malik</i>	
Two-Phase Flow Behavior of Real Fluids with Heat Transfer and MHD Effects	102
<i>Devendra Kumar, Mahesh Garvandha, Rajesh Kumar, Satyanarayana Bora</i>	
Empowering Precision Machine: Deep Learning Technique for Lung Cancer Diagnosis	108
<i>Danish Jamil, Syed Mehr Ali Shah, Muhammad Numan Ali Khan, Fatma Mahfoodh Mohammed Aljarwani</i>	
AI-Powered Privacy Preservation: A Novel Framework for Adaptive Data Protection	115
<i>R. Senthil Kumar, J. Lokeshwari, Selvanayagi Kolandapalayam Shanmugam, V. Thamarai Selvi</i>	
Machine Learning Approaches for Accurate Energy Content Prediction in Foods Using Nutritional Data	121
<i>Nishan Wickramasinghe, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Design of an Intelligent Self Balancing Inspection Robot for Industrial Monitoring.....	127
<i>Mohammed Abaker, Zeashan Khan, Samir Mekid</i>	
Predicting User Behavior Models Using M-Commerce Methods Decorated with Weighted Scoring and Mining Techniques	133
<i>Nagarajan Karthikeyan, Muniappan Ramaraj, Ilango Bhaarithi, N. Thangarasu, Jothish Chembath, C. Kumuthini</i>	
Detection of Cancer Cells Using Convolutional Neural Networks (CNNs).....	142
<i>Md. Ghouse Mohiuddin, D. Laxmi Sreenivasa Reddy, Aijaz Ahmed</i>	
Diabetic Patient Readmission Predictive Analysis: A Comparative Study of Machine Learning Models of Hospital Readmissions	148
<i>Anuj Bhardwaj, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Fault Detection System Using Machine Learning in IoT Based Automobile Industries	154
<i>C. Kumuthini, K. Kavitha, N. Thangarasu, P. Tamarasi, M. Kavitha, R. Vikram</i>	
Soil Image Classification and Crop Recommendation Using Convolutional Neural Networks.....	160
<i>S. M. Jasvanth, E. J. Thomson Fredrik</i>	
XHVCT: Explainable Hybrid Vision Convolutional Transformer for Maize Disease Detection	166
<i>Pragya Hari, Simranpreet Kaur, Deeksha Solanki, Sriram Singh, Maheshwari Prasad Singh</i>	
Developing Innovative AI-Based Educational Guidance Systems to Meet the Needs of Each Student Individually: A Comprehensive Review	172
<i>Nasim Salim Ziyad Al Balushi</i>	
Patient Data-Driven Scratch Intensity Classification with LSTM.....	178
<i>Muhammad Jawad Jafri, Fawad Salam Khan, Sajjad Ahmed, Furqan Amjad</i>	
Malware Detection Based on Stack Ensemble Using Machine Learning.....	183
<i>Christopher Ifeanyi Eke, Fawaz Ibrahim Olamide, Musa Phiri, Mulenga Mwenge, Faith Fatokun B, Liyana Shuib</i>	

Evaluation of Performance in Container Orchestration with Single-Board Computers in K3s Cluster	188
<i>Ramkumar Lakshminarayanan</i>	
Exploring the Correlation Between Academic Pressure and Mental Health: A Study of Anxiety, Stress, and Depression Levels Among University Students in Bangladesh.....	194
<i>Sunil Kumar, Raza Hasan, Shakeel Ahmad, Salman Mahmood</i>	
Sign the Voice: An Embedded Software for Voice to Sign Language Translation	199
<i>Donna Lyn C. Peleo, Myra M. Patalay, Jesfer M. Dela Cruz, Emmanuel A. Ramirez</i>	
BANTAY: An Analytical Crowdsourcing Mobile Application for Improving Peace and Order in the Town of San Miguel, Bulacan	205
<i>Bernardino P. Malang, Jennifer Solis</i>	
Analyzing Socioeconomic and Climatic Trends in Oman's Governorates Using Python Data Analysis Tools	211
<i>Amol Ganesh Deshmukh, Nisha Radhakrishnan</i>	
Enhancing the Efficiency of Industrial Boilers and Burners Using Deep Learning Techniques	217
<i>Anwar Al Zadjali, Varghees Manappallil Joy, Santosh Madhav Walke</i>	
Uncovering Android Zero-Day Threats: The Zero-Vuln Approach with Deep and Zero-Shot Learning	222
<i>Suresh Palarimath, Pyingkodi Maran, Wilfred Blessing N. R, S. J Kavitha, Cibi. A, Subitha G. Sutherlin</i>	
Retaining the Best: How AI and IoT Can Combat Employee Turnover.....	228
<i>Danish Hamid, Ch Anwar Ul Hassan, Aman Ullah Yasin, Sarah Shabir, Tahir Akram, Muhammad Adnan Aslam</i>	
Artificial Intelligence in Mathematics and Machine Learning	235
<i>M S Umamaheswari, S Nareshkumar, D Sherwin Jaya Durai</i>	
Artificial Intelligence Impact on Digital Nomad Work Life Balance: The Role of Automation	240
<i>Lyn M. Dalisaymo, Myra M. Patalay</i>	
Potential Impact Factors of Generative-Based Chatbots Versus Retrieval-Based Chatbots: A Study of Adoption in Indian Educational Institutes	246
<i>Mohammed Waseem Ashfaq, Charansing N. Kayte</i>	
The Smart Assistive Technology in Education for Students with Disabilities in Oman.....	252
<i>Junath Naseer Ahamed, Laryam Nasser Albalushi, Hind Maktoom Almamari</i>	
Exploring the Influence of Social Media on Omani Culture, Identity and Its Impact on Youth Behavior	255
<i>Junath Naseer Ahamed, Hawa Zaid Al Shiadi, Abir Nasser Al Mamari, Shatha Mohammed Al Farsi</i>	
A Study on the Development and Evaluation of Smart Home System Using IoT and AI Technologies in Oman.....	262
<i>Junath Naseer Ahamed, Mohammed Ashraf, Ahmed Juma</i>	
Revolution in the Effectiveness of Artificial Intelligence (AI) on Educational Resourcing for Student in Oman to Enhanced Learning Opportunities	268
<i>Junath Naseer Ahamed, Jaber Saleh Al Jabri, Saif Awadh Al Saadi</i>	

Explore Enhanced Communication and Decision Making Between Government and Citizens of Oman Using Digital Technologies.....	274
<i>Junath Naseer Ahamed, Naira Hassan Anwar, Muneera Saif Al Naabi, Mashaal Atiyah Al-Badi</i>	
Integration of LabVIEW and DAQ Card for Development of Electrogastrogram Simulator	280
<i>Zia Mohy Ud Din, Muhammad Omar Cheema, Jahan Zeb Gul, Fawad Salam Khan</i>	
Theoretical Study of MHD Blood Flow in Bifurcated Arteries with Application of Heat Source and Porous Medium in View of Carotid Body Tumors	283
<i>Devendra Kumar, Mahesh Garvandha, Satyanarayana Bora, Sanjeev Kumar, Narendra Deo</i>	
Optimizing Fishing Operations Efficiency Through IoT-Powered Monitoring and Oversight	289
<i>Salman Murad Albalushi, Divyajyothi M. G., Nawar Habib Ali Albalushi, Rabia Abdulrahim Albalushi</i>	
Techniques to Evaluate and Enhance Security Measures in Cloud Computing Environments	294
<i>Ghadeer Qasim Juma Alajmi, Divyajyothi M. G, Rachappa Jopate, Iman Badar Albusaidi, Naqaa Salim Sulaiman Rashid Alaifi</i>	
Exploring the Integration of Artificial Intelligence in Education and Smart Transport Technology in Oman; Perceptions, Challenges and Ethical Considerations	299
<i>Hasna Mohammed Al Salmi, Divyajyothi M. G., Rachappa Jopate, Rawan Majid Al Ghafri, Maram Sulaiman Al Abri</i>	
Optimizing Sustainable Agriculture in Oman Through AI-Driven Precision Techniques	304
<i>Divyajyothi M G, Rachappa Jopate, Rabia Abdul Rahman Abdulsalam Albalushi</i>	
Building Advanced RAG Q&A with Multiple Data Sources Using Langchain: A Multi-Search Agent RAG Application in Ubiquitous Learning	308
<i>Manel Guettala, Samir Bourekkache, Okba Kazar, Saad Harous</i>	
Improving Quality of Service Using a Innovative Energy Effective Reinforcement Based Path Finding in Mobile Ad Hoc Network	315
<i>Singaravelan M, Saleem Raja A, Thangam S</i>	
A Practical Evaluation of Intrusion Detection in IoT Networks Using Random Forest and Network Intrusion Detection Dataset	319
<i>Ahmed Al Farsi, Ajmal Khan, Mohammed M. Bait-Suwailam</i>	
Thermodynamic Analysis of Cooling Tower Performance in Dhofar Region Power Plants.....	325
<i>Devandiran Eswaravelu, Issa Muslem Said Al-Maashani</i>	
A Study on the Importance of Cybersecurity and Its Significance in Omani Society	331
<i>Junath Naseer Ahamed, Aisha Abdullah Mohammed, Hamda Khamis Al Ghaithi, Rawya Khamis Al Salty</i>	
A Study for Smart Technologies for Autism Spectrum Disorders Children in Oman to Facilitate Interactive Communication	337
<i>Junath Naseer Ahamed, Manal Alghafri, Shima Al-Zeid, Misoon Al Mamari</i>	
Sustainable Smart Irrigation Leveraging Smart Technologies for Improved Water Efficiency- A Review.....	347
<i>Ahmad Sajjad Siddiqui, Khalid Hilal Al Muaini, Abdul Haseeb Shahid Latif, Bassam Mohammed Al Balushi, Senthil Ramadoss</i>	

Virtual and Augmented Reality in Interactive Entertainment: Unlocking New Dimensions of Immersive Interaction.....	352
<i>Jasim Sharki Ghulam Al Balushi, Malak Ibrahim Ahmed Al Jabri, Suresh Palarimath, Chithik Raja Mohamed, Venkateswaran Radhakrishnan, Muni Balaji Thumu</i>	
Leveraging Generative Adversarial Networks (GANs) for Enhancing Medical Data Through Augmentation.....	358
<i>Abdul Rahiman S. K, Sabiha Sheerin Shaik</i>	
Optimizing and Enhancing it Operation Operating Models Through Artificial Intelligence.....	370
<i>Ali Al Hinai, Mahmood Al Mazroui</i>	
Blockchain Technology Integration Across Diverse Domains in Machine Learning Applications.....	375
<i>Rachappa Jopate, M. G. Divyajyothi, Ariam Saleh Zuwayid Juma Alhasani</i>	
A Study on Smart Green Hydrogen Production System Using IoT and AI for Small-Scale Energy Applications.....	379
<i>Manar Abdullah Saleh Alshiyadi, Sara Ahmed Sulaiman Alfahdi, Shadha Rashid Obaid Almani, Manahid Khamis Juma Alharrasi, Rajesh. D. Gnana</i>	
Machine Learning Model for Predicting Hepatocellular Carcinoma in Hepatitis C Patients.....	384
<i>Arooj Fatima, Jarutas Andritsch</i>	
A Case of Study on the Role of Internet of Things Technology in Enhancing the Efficiency of Converting Agricultural Waste into Organic Fertilizer.....	390
<i>Sundos Ali Al-Fulaiti, Aya Salim Hamed Al-Hakmani, Amira Suliaman Al-Breiki, Shahla Anwar Al-Khanbashi, Alhanouf Ibrahim Al-Alawi, Imran Qureshi</i>	
Predicting Student's Final Examination Grades in Statistics Courses Using a Regression Model Based on Internal Assessment Scores.....	395
<i>Jagath Prasad Sreedhar, Ranjini S Nair, Abraham Varghese</i>	
A Systematic Review of 5G Applications and Impacts in Automotive Manufacturing and Mobility	400
<i>Moein Hossein Torkzadeh, Vinu Sherimon</i>	
The Role of AI in Enhancing Decision-Making in Small and Medium Enterprises (SMEs)	406
<i>Joefrelín C. Ines, Marilou Q. Tolentino, Jay C. Dela Cruz, Rolando Estabillo, Anthony M. Madlambayan, Cirilo E. Mirano, Juvy A. Vergara</i>	
Addressing Security Risks in IoT by Safeguarding Privacy and Networks of Connected Devices.....	410
<i>Thirumurugan Shanmugam, Arun Kumar Sivaraman</i>	
Cars Fuel Efficiency Prediction.....	416
<i>Wael Al Thohli, Khalid Hilal Al Muaini, Laith Al Maharbi, Manju Jose</i>	
Revolutionizing Brain Stroke Classification with Neuro-Xception and ELM Integration in Deep Learning	420
<i>Jagadeesan S, Venkadeshan Ramalingam, Abinash P, Ilayaraja V, Jafar Ali Ibrahim Syed Masood, Tamil Priya D</i>	
User Friendly and Safe Navigation of Tourists in Oman Using a Mobile Application.....	426
<i>Khalid Hilal Al Muaini, Manju Jose</i>	
Enhancing Well Construction Efficiency: Diagnostic Analysis to Combat Invisible Lost Time (ILT)	431
<i>Rahab Hilal Alrahbi</i>	

The Role of AI in University Course Registration in the Middle East: AI and Machine Learning Approaches to Improve Academic Performance	435
<i>Boumedyen Shannaq</i>	
A Novel DAQ Card-Based Electrohysterogram Simulator for Obstetric Studies	441
<i>Muhammad Omar Cheema, Jahan Zeb Gul, Fawad Salam Khan, Zia Mohy Ud Din</i>	
Insights into Physical Stress: EOG-Based Detection and Classification	445
<i>Muhammad Omar Cheema, Aliza Ranash, Aamnah Sultan, Rania Khalid, Jahan Zeb Gul, Fawad Salam Khan, Zia Mohy Ud Din</i>	
Predicting Lung Cancer Risk Using Artificial Intelligence	449
<i>Syed Mehr Ali Shah, Danish Jamil, Muhammad Numan Ali Khan, Fatma Mahfoodh Mohammed Al-Jarwani</i>	
A Novel Approach to Derma Quantum (Skin Disease Detection and Classification Using ResNet50 and QCNN).....	455
<i>Harsh Kumar, Pranesh Sharma, A. Ajina, Nithin M Kannal, Ujjwal Kumar</i>	
Enhancing Collision Prevention for Visually Impaired Individuals: A Novel Approach Using Specialized Glasses and Headset Technology	462
<i>Abdullah Al-Farsi, Abir Alsideiri, Al Anood Al-Amri, Al Yaziya Al Shaibi</i>	
Geospatial Intelligence in Business: A Geographic Information System-Based Approach.....	467
<i>Bernard Ugalde, Edgardo Dalan, Lilibeth Decena</i>	
Enhanced Smart Souq: IoT, AI, and Fuzzy Logic for Modernizing Traditional Markets in Oman	473
<i>Rabie A. Ramadan</i>	
Gender Disparities in Cybersecurity Awareness, Practices, and Knowledge: A Comparative Study of Omani and Filipino University Students	479
<i>El Jireh P. Bibangco, Redjie T. Villar</i>	
Empowering Education with AI: The Rise of Chatbots in Educational Institutions.....	485
<i>Noman Abdul Rehman, Syed Munassir Hussain</i>	
4D Image Compression in Healthcare Using Convolutional Neural Networks (CNNs).....	490
<i>P. Chitra</i>	
Cloud-Light: Enhancing Cyber Security with a Lightweight Cryptographic Algorithm for Cloud Environments.....	497
<i>D. Suresh Kumar, L. Jayasimman</i>	
An Effective Approach for Detection of Racism and Abusive Memes Using CNN, Roberta and BERT Algorithm.....	502
<i>V Joseph Raymond, Geogen George, Bhuvan Beera, Amit Pimpalkar</i>	
A Novel Method of Evaluating the Harmonic Power Analyzer's Performance for PC-Based Testing and Measurement Applications Related to Electromagnetic Compatibility	508
<i>J Adeline Sneha, N. R Wilfred Blessing, Suresh Palarimath, S Poorana Senthilkumar, Manigandansekar, G Sutherlin Subitha</i>	
A Study on Challenges of FinTech for Improving Accounting Information Systems (AIS)	514
<i>Sara Sadiq Al Balushi, Wilfred Blessing N. R, Nawf Taresh Ghadeer Al-Badi, Amal Mohammed Al-Maamari</i>	

Advancing Brain Image Segmentation: A Comprehensive Exploration of Enhanced VGG16 Architecture for Precise Neuroanatomical Mapping	520
<i>Sheeja Kumari V, Wilfred Blessing N. R, Suresh Palarimath, Hemalatha Gunasekaran, Poorana Senthilkumar S, Sutherlin Subitha G</i>	
Real-Time Enhanced GAN-Powered Intrusion Prevention System: Safeguarding Networks with Advanced AI.....	526
<i>Sutherlin Subitha G., Seldev Christopher C., Wilfred Blessing N. R, Sheeja Kumari V.</i>	
Ask Your Transcript: LLM Driven Insights for Academic Advising.....	532
<i>Umar Sathic Ali</i>	
Evaluating the Effectiveness of Medication Across Diseases	536
<i>A. Sheryl Miracline, C. Linda Hepsiba</i>	
Evaluation of Performance of Math Placement Test Passers in the Subsequent Math Course.....	542
<i>Deogracias Esteves Joaquin, Kp Santhosh Kumar</i>	
Advancements in Glaucoma Diagnosis: Composite Dilated U-Net Based Convolution for Image Segmentation	547
<i>Abdul Basith Z, Sulthan Ibrahim M</i>	
Anomaly Detection in Network Traffic Data Using Deep Learning	552
<i>Ramya S, S. Annal Ezhil Selvi</i>	
Design and Development of IoT Prototype for Real-Time Theft Detection and Optimization of Electricity Using Machine Learning Techniques.....	557
<i>Lakshmi G, R Gopal</i>	
Intelligent Medication Vending Machine for Enhanced Adherence	561
<i>K Sowndarya, C Linda Hepsiba</i>	
Adaptive Learning Pathways: Advancing Personalization in Online Education Platforms.....	566
<i>Maha Yaqoob Al Balushi, Alia Salim Al Harthi</i>	
Predicting Health Care Facility Stay Duration: A Machine Learning Approach	572
<i>Georgios Kleitou, Jarutas Andritsch</i>	
AI Based Model for the Creation of Chatbots to Help in the Instructional Process	577
<i>Kachi Anvesh, Bharati Mahantayya Reshmi, R. Karthikeyan, S. Ramamoorthi, S. Faizal Mukthar Hussain</i>	
Educational Transformation Through Machine Learning: Exploring Adaptability and Sentiment for Academic Excellence	583
<i>Ch Anwar Ul Hassan, Muhammad Sufyan Khan, Danish Hamid, Aman Ullah Yasin, Ehtisham Ul Haq, Fawad Salam Khan</i>	
Bias Mitigation in Medical Datasets: Enhancing GBM and KNN Predictive Models with SMOTE Techniques.....	589
<i>Djalila Boughareb, Hana Bordjiba, Rima Boughareb, Hamid Seridi</i>	
Deep Learning for Accurate Cancer Type Classification Using Gene Expression Data.....	595
<i>S. Vidhya, P. Velmurugan</i>	
A Comprehensive Review of SDP Using Machine and Deep Learning Techniques in Software Testing	599
<i>Suguna Angamuthu, K. G. Maheswari</i>	

Integrating Machine Learning and Wearable Devices for Early Detection and Monitoring of Multiple Sclerosis Patients: A Comprehensive Approach	605
<i>Al-Yaziya Al Jabri, Abir Alsideiri</i>	

Comparative Analysis of ANN, XGBoost, and GridSearchCV-Tuned FNN for Diabetes Prediction	611
<i>Ranjani T, S. Annal Ezhil Selvi</i>	

Author Index