# 2025 22nd International Learning and Technology Conference (L&T 2025)

Jeddah, Saudi Arabia 15-16 January 2025



IEEE Catalog Number: CFP25B33-POD ISBN: 979-8-3315-3222-2

# Copyright © 2025 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:
 CFP25B33-POD

 ISBN (Print-On-Demand):
 979-8-3315-3222-2

 ISBN (Online):
 979-8-3315-3221-5

ISSN: 2690-831X

### **Additional Copies of This Publication Are Available From:**

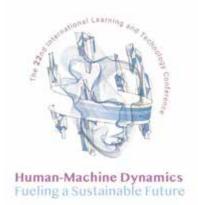
Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com









# **Table of Content**

Track I: Human-Machine Interfaces and Sustainable Education	
PID 3 — "Revolutionizing Digital Media Content Using a Smart Drone and an Innovative ML Technique" - Faris Almalki and Rahaf Almarzouki, Saudi Arabia.	1
PID 132 – "Centroid-Based Aspect Sentiment Analysis for MOOC Learner Reviews" - <i>Naila Marir, Akila Sarirete and Tayeb Brahimi, Saudi Arabia.</i>	7
PID 55 – "Contemplating and Visualizing Gameful Experience (GAMEX) in Education Through Bibliometric Analysis of Literature" - Asad Abbas and Mehul Mahrishi, India.	13
PID 65 – "The Usability of Teaching Practice Placement System Through Cloud Technology: PLMiSYS" - Mohd Mokhzani Ibrahim, Ashardi Abas, Noor Hidayah Azmi and Norshahila Ibrahim, Malaysia.	19
PID 76 – "TeacherEye: An Al-Powered System for Monitoring Student Engagement in Online Education" - Zainab Abdelhadi, Mohammed Naseif, Waad Alhejali and Ahmed Elhayek, Saudi Arabia.	25
PID 98 —"IoT-enabled Student Attendance System using RISC-V based Embedded System" - Khadija Khan, Nada Alzahrani, Reham Abed, Iman Sofia Razi and Imed Ben Dhaou, Saudi Arabia.	31
PID 97 – "Enhancing Education Accessibility: Portable Microservers for Computer-Based Testing in Resource-Constrained Environments" - <i>Riyad Dhuny and Fangli Ying, China.</i>	36
PID 119 – "Word Recognition: A Comparative Study of Physical and Digital Media and Their Influence on improving QURAN Reading" - <i>Ibahim Hassan, Saudi Arabia</i> .	42
PID 19 — "Engineering Education in a New Era: A Case Study in Saudi Arabia" - Maha Hassan and Sanaa Askool, Saudi Arabia.	48
PID 8 – "Blind Spots Detection in Autonomous Robots using Data Fusion and Deep Learning" - Mohamed Dwedar, Fatih Bayram and Alexander Jesser, Germani	54







Human-Machine Dynamics Fueling a Sustainable Future

PID 33 – "Cross-Domain Adaptation in Person Re-identification through Adversarial Teaching for Smart Cities" - <i>Qazi Mazhar Ul Haq, Pakistan.</i>	60
PID 41 – "Real-Time Hardware Demonstration of Innovative Technology for Cleaning of Solar PV Modules" - <i>Mohammad Rizwan and Abdul Azeem, India.</i>	66
PID 62- "Comparative Analysis of Parameter Extraction Techniques for Healthy and Degraded PV Modules" - Hicham Oufettoul, Ibtihal Ait Abdelmoula, Redouane Chaibi, Saad Motahhir, Nassim Lamrini and Oussama Idbouhouch, Morocco.	71
PID 77- "Genetic Algorithm Optimization based Control for Heat Integrated Distillation Column" - Nura Musa Tahir, Jie Zhang and Matthew Armstrong, United Kingdom.	77
PID 114 — "Advancing Environmental Sustainability: Renewable Energy Transition, Carbon Footprint Reduction, and Emission Control Innovations" - Aziza I. Hussein, Amal A. Alghamdi, Amal A. A. Alamoudi, Omar M. Altahawi, Narjisse Kabbaj, M. Mourad M. Mourad Mabrook and Mostafa Wageh Lotfy, Saudi Arabia.	83
PID 122 – "A Scalable, Portable, and Decentralized Power Solution Using Thin-Film Solar Panels with Integrated Energy Storage" - <i>Majd Batarseh, Sandy Miguel, Afaf Allabadi, Mayar Alkhawaja and Yasar Mandouri, Jordan.</i>	89
PID 1 – "Smart Synergies: Integrating Technologies for Sustainable Urban Planning and Smart City Education - A Case Study" - <i>Aftab Ara and Affreen Ara, Saudi Arabia</i>	95
PID 11 —"Predictive Control MPC for wind turbine systems based DFIG" - Farah Echiheb, Badre Bossoufi, Ismail Kafazi, Thamer A. H. Alghamdi and Hicham Oufettoul, Morocco.	103
PID 124 – "Optimization of Photovoltaic Power Forecasting: A Comparative Study of Deep Learning Architectures, Optimization Techniques, and Evaluation Metrics" - Husein Mauladdawilah, Mohammed Balfaqih, Zain Balfagih, E.J. Gago and M.C. Pegalajar, Saudi Arabia.	109



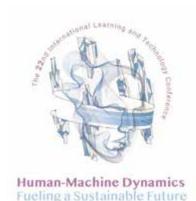




Human-Machine Dynamics Fueling a Sustainable Future

PID 59 – "Transfer Learning for Wind Speed Forecasting in the Desert" - Ghadah Alkhayat, Saudi Arabia.	115
PID 135 – "Engineering Quantum Dots: Overcoming Challenges in Telecommunications and Human-Machine Interaction" - <i>Mohammed Abdul Majid, Saudi Arabia</i> .	120
PID 142 – "Relative Permeability Modeling for Underground Hydrogen Storage: A Comparative Analysis of Hysteresis Effects" - Sarah Basyouni, Narjisse Kabbaj and Mohamed El-Amin Mousa, Saudi Arabia.	124
PID 121- "Measuring the Performance of Al-Generated Animations: Strengths, Weaknesses, and Future Directions" - Mohamad Izani Zainal Abidin, Akhmed Kaleel, Amr Assad, Kamal Bahrin, Aishah A. Razak, and Mohd. Rosli, Malaysia.	130
Track: III Smart Campuses and Technological Transformation	
PID 131 – "Cognitive Radio Receiver Design Employing Pipeline Successive Approximation ADC" - Muhammad Samee Baig and Aziza I. Hussein, Saudi Arabia.	136
PID 138 – "Travel Persona-Based Destination Recommendations for Enhancing Tourism in Saudi Arabia" - Hadeel Balahmar, Shumokh Alhattami, Deema Hamidah, and Passent Elkafrawy, <i>Saudi Arabia</i> .	142
PID 143 – "Artificial Intelligence in Robotics: Revolutionizing Retail Store Automation and Beyond" - Nasser Khalufi, Saudi Arabia.	147
PID 137 – "Profit Sharing Game for Metaverse Applications" - Fidaa Abed, Saudi Arabia.	153
PID 25 - "VHF Band III Spectrum Availability and Utilization for Cognitive Radio Implementation in Malaysia" - Hashim Elshafie, Hafizal Mohammad, Rashid A. Saeed, Mosab Hamdan, Mahmoud M. Khattab and Abdelmoty M. Ahmed, Ireland.	158
Paper 27 – "Two-Dimensional DOA Zero-Forcing Precoding for Enhanced Spectral Efficiency in Cell-Free Massive MIMO" - Ehab Ali, Mohammed Balfaqih, Mohamed Alrayes and Ibrahim Shglouf, Libya.	164
Paper 45 – "Predicting Used Cars Prices in the Egyptian Market: A Machine Learning Approach" - Mohamed Taher and Sahar Fawzi, Egypt.	170



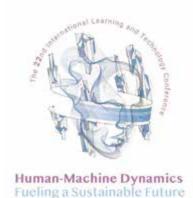




175 Paper 113 – "Enhancing 6G-Satellite Network Integration with Artificial Intelligence: A Future Communication Paradigm" - Ibrahim Salah, Aziza Hussein, Mostafa Wageh Lotfy and Mohamed Mabrook, Iraq. Paper 120 - "Modeling and Simulation of Grid-Connected PV System Faults Using 180 MATLAB/Simulink" - Mayar Alkhawaja, Sandy Miquel, Moutaz Abu Shabab, Muhy Zater and Majd Batarseh, Jordan. 186 Paper 85 – "Automated Integration of BIM and 3D GIS for Sustainable Infrastructure Management" - Yassmine Zada, Imane Sebari, Victor Morel and Amanda Pierrot, Morocco. PID 93 - "Enhancing Vehicular Service Allocation with MEC Dynamic Task Offloading in a 192 Dammam District Using CloudSim-SUMO" - Mohammed Barakat, Rashid Saeed and Salaheldin Edam, Sudan. PID 102 - "Ensemble Learning and Time-Domain Feature Mining based Appliance Power 198 Consumption Pattern Recognition" - Saeed Mian Qaisar, Saudi Arabia. PID 110 - "Ensemble Learning and Event-Based Feature Mining for Li-Ion Battery State 204 Prediction" - Saeed Mian Qaisar, Abdulhamit Subasi, Saudi Arabia.

## Track IV: Policy, Ethics, and Human-Centric Technology in Education 210 PID 24 – "Ensuring Sustainable Safety in Fine-Grained Android Permission Model: Decidability through Finite Attribute Range Constraints" - Mohammad Nauman and Sohail Khan, Saudi Arabia. PID 38 - "The Relationship Between Social Media Usage and Aggressive Behavior Among 216 Secondary School Students in Muallim District" - Zulkifli Bin Mamat, Nor Azian Bt Mohamed Bukhari and Mohd Noor Bin Idris, Malaysia. 222 PID 39 – "Evaluating Compliance Costs and Their Impact on User Satisfaction and Behavior: Insights from the e-Claim System at UPSI" - Sayed Muhd Arif Bin Sayed Yahya, Nor Azrin bin Md Latip and Mohd Abdullah bin Jusoh, Malaysia PID 46 – "Leveraging AI for Sustainable DeepFake Human Face Detection Using Transfer Learning 228 Technique" - Naif Almalki, Mahmoud Ragab and Faris Kateb, Saudi Arabia. PID 50 - "Automated Motawif Monitoring Hajjis through the Pilgrimage Period" - Reema 233 Abdallah, Sarah Alshumayri, Lujain Bukassim and Passent Elkafrawy, Saudi Arabia.







PID 23 – "The Role of Artificial Intelligence (AI) in Enhancing the Effectiveness of Decision-Making from Faculty Members' Point of View in Colleges of Administrative Sciences at Saudi Universities" - Saad Al-Otaibi, Mawaddah Balilah and Fadia Al-Jahni, Saudi Arabia.

PID 30 – "Advanced Machine Learning-Driven Vulnerability Management: A Scalable Approach to Securing Dynamic Cloud Environments" - Satyanarayana Raju, USA.

PID 89 – "Bridging Gender Disparities in Mental Health: A Bilingual Large Language Model for Multilingual Therapeutic Chatbots" - Ahmed Tamer, Zeyad Elshaer, Ghada Khoriba, Tamer Arafa and Essam Rashed, Egypt.

PID 108 – "Exploiting Artificial Intelligence Approaches to Augment Decision-making Processes for an Intelligent Performance in Football" - Souheila Boudouda,

Aya Merwani and Naila Marir, Algeria.

PID 123 – "Development of an Intelligent GUI with ChatGPT for Efficient and Accurate Transformer Fault Diagnosis Using DGA, Duval Triangle Method, and Machine Learning Automation" - Safia Babiker, Jouri Jadalhaq, Jana Jadalhaq and Enfel Barkat, Saudi Arabia.

PID 129 – "A Novel Framework for Deepfake Image Detection Using Deep Learning Approach" - Ambika Jaiswal, Aruna Chamatkar, Akash Prakash Kharat, Bhisham Sharma, Imed Ben Dhaou, and Suhashini Awadhesh Chaurasia India.

PID 136 – "Automating Neural Model Selection in Spiking Neural Networks Using AutoML Techniques" - Mr Sanaullah, Hirotada Honda, Kaushik Roy, Axel Schneider, Joachim Waßmuth and Thorsten Jungeblut, Germany.

PID 66 — "Data-Driven Framework for Optimizing Internship Efficiency and Addressing Skills Mismatch in Malaysian Higher Education" - Ashardi Abas, Mohd Mokhzani bin Ibrahim and Noor Hidayah Azmi, Malaysia.

PID 130 – "Distributed Denial of Service Attack Detection by Machine Learning Techniques" - Varkha K. Jewani, Prafulla E. Ajmire, Mohd Atique, Bhisham Sharma, Imed Ben Dhaou and Suhashini Awadhesh Chaurasia

### Track V: Al and Machine Learning for Health and Environmental Well-being

PID 81 – "Revolutionizing Diabetes Prediction Models: Leveraging Advanced Feature Reduction and Classification Methods" - Ameera Attiah, Mawaddah Alagha, Lujain Bukassim and Passent Elkafrawy, Saudi Arabia.

292

263

269

274

280







Human-Machine Dynamics Fueling a Sustainable Future

PID 47 – "Harnessing Deep Learning for Enhancing Brain Tumor Classification in a Sustainable Healthcare Environment" - Adnan Bajaber and Mahmoud Ragab, Saudi Arabia.	298
PID 111 – "Redefining Protein Structure Prediction: Insights from AlphaFold's Methodology and Applications" - Reema Abdallah, Sarah Alshumayri and Lujain Bukassim, Saudi Arabia.	304
PID 133 – "Deep learning for sleep disorder diagnosis: Enhancing EEG Analysis with Machine Learning Techniques" - Baher Mohamed and Enfel Barkat, Saudi Arabia.	309
PID 144 – "Classifying Enzymatic Functions Using Graph Neural Networks: Insights from the ENZYMES Dataset" - Ameera Attiah, Mawaddah Alagha and Leen Sharab, Saudi Arabia.	315
PID 40 – "Performance Analysis of Explainable Artificial Intelligence Methods in Epilepsy Detection" - Prajakta Rathod, Shefali Naik and Jayendra Bhalodiya, India.	321
PID 84 – "Enhancing Timeliness and Accuracy in Blood Transportation through Drone Technology in Saudi Arabia's Government Clinic" - Meaad Alseraihi, Amjaad Aljadani, Samar Alsahafi, Maryam Alzein and Salma Elhag, Saudi Arabia.	327
PID 34 – "Glaucoma Diagnosis with Fundus Image Analysis Using Cup-to-Disc Ratios" - Nema Salem, Kulsoom Mateen, Wafa Alharbi and Safiya Sarfaraz, Saudi Arabia.	333
PID 107 – "Digitization of Medical Data: LLM-Based Data Entry, Cleansing, and Visualization Solutions" - Mahmoud Amgad, Bahaa Shamoon, Hagar Mekhemar, Rodeen Mostafa, Toqa Tamer, Habiba Mohamed, and Sahar Fawzi, Egypt.	339
PID 105- "Effectiveness of Advanced ECG Noise Reduction Filters" - Nema Salem, Jude Jamjoom, Maha Qashqari and Maria Alzahrani, Saudi Arabia.	343
PID 139 — "Classifying Speech Disorders Using Voice Signals and Machine Learning" - Durid Almasri, Amro Yousef, Layan Turkistani, Tariq Tadmori, Enfal Barkat and Narjisse Kabbaj, Saudi Arabia.	349
PID 109 – "Strategies for Effective EEG Preprocessing" - Nema Salem, Nora Alamoudi, Lama Moustafa and Fatima Bagais, Saudi Arabia.	354
140 – "Classification of ECG Signals Using Machine Learning for Detection of Cardiac Abnormalities" - Nawar Alimam, Alhassan Alsaggaf, Enfel Barakat, Saudi Arabia	360