



2024 Third International Conference on Sustainable Mobility Applications, Renewables and Technology (SMART)

November 22-24, 2024



SMART2024 Final Program

Day 0: Thursday, November 21	
November 21 14H00-17H00	Registration and information
Day 1: Friday, November 22	
November 22 8H00-17H00	Registration and information
November 22 9H00-9H30 HUB lobby	Opening Sherif Moussa Dean of the School of Engineering, Applied Science & Technology Canadian University Dubai, United Arab Emirates (UAE) SMART2024 General Chairman Hussain Al-Ahmad IEEE UAE Section Chair Ahmed Masmoudi University of Sfax, Tunisia SMART2024 Technical Program and Publication Committees Chairman Karim Chelli CEO/President of Canadian University Dubai SMART2024 Honorary Chairman

<p>November 22 9H30-10H30 HUB lobby</p>	<p>Plenary Session 1</p> <p>Chairs: Omar Hegazy (Belgium), Benedikt Schmuelling (Germany) and Antonio J. Marques Cardoso (Portugal)</p> <p>SMART24-PS1: <i>Power Electronics—the Key Technology for Grid Integration</i></p> <p>Frede Blaabjerg Aalborg University, Denmark</p>
<p>10H30-11H00</p>	<p>Coffee break</p>
<p>November 22 11H00-12H00 HUB lobby</p>	<p>Plenary Session 2</p> <p>Chairs: Frede Blaabjerg (Denmark), Michela Longo (Italy) and Alessandro Silvestri (Italy)</p> <p>SMART24-PS2: <i>Engineering a Sustainable Future: Innovations, Challenges, and Collective Responsibility</i></p> <p>Dima Jamali Canadian University Dubai, UAE</p>
<p>12H00-14H00</p>	<p>Lunch</p>
<p>November 22 14H00-16H00 HUB 111</p>	<p>LS1: Lecture Session on Sustainability Initiation and Education: An Academic Commitment</p> <p>Chairs: Dima Jamali (UAE) and Jorge Varela Barreras (UK)</p> <p>SMART24-46: <i>Towards the Evaluation of Carbon Footprint for University Communities' Mobility: Challenges, Opportunities, and Reduction Strategies</i> Mauro D'Apuzzo, Alessandro Silvestri, Sofia Nardoiani and Giuseppe Cappelli University of Cassino and Southern Lazio, Italy</p> <p>SMART24-61: <i>The Role of Higher Education Institutions in Sustainable Development; A Case Study of UDST</i> Salem Al-Naemi, Awni Al-Otoom, Rachid Benlamri and Biju Koshy University of Doha for Science and Technology, Qatar</p> <p>SMART24-85: <i>The University Contribution to the Development of Smart Communities through Education and Research</i> Alessandro Silvestri and Alessandra Sannella University of Cassino and Southern Lazio, Italy</p>

	<p>SMART24-101: <i>Comprehensive Review of AI, IoT, and ML in Enhancing Urban Mobility and Reducing Carbon Footprints</i> Mahmood Hossain, Hamad Khalid, Avent Prakasa Rao, Mohammad Lootah, Salah Salim Khalaf Al Mohammedi and Salih Rashid Majeed Canadian University Dubai, UAE</p> <p>SMART24-107: <i>Sustainable Mobility Actuators, Research and Technology: Clean Transportation Dedicated Tailor-Made Master Program</i> Ahmed Masmoudi University of Sfax, Tunisia</p> <p>SMART24-113: <i>Achieving Sustainable Software Systems by Reducing Bloat and by Promoting Green Practices in Software Engineering Education</i> Kaya Oguz Canadian University Dubai, UAE</p>
<p>November 22 14H00-16H00 HUB 112</p>	<p>LS2: Special Lecture session on Novel Topologies of Electrical Machines with and without Magnets</p> <p>Chairs: Dawei Liang (UK) and Zi Qiang Zhu (UK)</p> <p>SMART24-145: <i>A Novel Hybrid Stator Pole Permanent Magnet Machine</i> Hui Yang, Xiangxiang Ji, Cheng Qian, and Heyun Lin Southeast University, China Zi Qiang Zhu University of Sheffield, UK</p> <p>SMART24-146: <i>A Novel Stator Surface-Mounted Permanent Magnet Machine with Asymmetric Stator Pole Configuration</i> Hui Yang, Xiangxiang Ji, Heyun Lin, Cheng Qian and Xing Liu Southeast University, China Zi Qian Zhu University of Sheffield, UK</p> <p>SMART24-147: <i>A Novel Dual-layer Asymmetric Interior Permanent Magnet Machine with High Torque Density and Low Torque Ripple</i> Yang Xiao and Bing Ji University of Leicester, UK Ruichi Wang Loughborough University, UK Yiming Ma China Southern Power Grid, China Zi Qiang Zhu University of Sheffield, UK</p>

	<p>SMART24-44: <i>Design of Gravity Energy Storage Switched Reluctance Linear Motor</i></p> <p>Wenju Yan, Xinzhu Sun, Yang Wang, Hao Chen and Hongwei Yang University of Mining and Technology, China</p> <p>Qing Wang Nanchang University, China</p> <p>SMART24-149: <i>Performance Investigation of Multiplexing Transformer Based on Variable Flux Reluctance Machine</i></p> <p>Xu Liu, Guoliang Chen and Y. Cao Hebei University of Technology, China</p> <p>Zi Qiang Zhu University of Sheffield, UK</p> <p>SMART24-150: <i>Comparative Study of Permanent Magnet Synchronous Motors with Single and Double Stators for Robot Joint Applications</i></p> <p>Tianran He, Jiahe Tian and Wei Li Tongji University, China</p> <p>Dawei Liang and Zi Qiang Zhu University of Sheffield, UK</p>
<p>November 22 14H00-16H00 HUB 113</p>	<p>LS3: Lecture Session on Renewables: Forecast, Hybridization, Healthy and Faulty Operations</p> <p>Chairs: Benedikt Schmuelling (Germany) and Massimo Caruso (Italy)</p> <p>SMART24-28: <i>Ridge Regression Application for Fault Detection in Heat Pumps</i></p> <p>Pedro Barandier and Antonio J. Marques Cardoso CISE - Electromechatronic Systems Research Centre, Portugal</p> <p>SMART24-54: <i>Study of a Hybrid Energy Storage System for Novel Wind Power Generator</i></p> <p>Wenju Yan, Jingpeng Hu, Jun Xin, Hao Chen and Yang Wang University of Mining and Technology, Xuzhou, China</p> <p>SMART24-56: <i>Geothermal Resource Potential for Thermal Comfort and Pool Heating in a Hotel</i></p> <p>Pedro Barandier, Antonio J. Marques Cardoso and Victor Cavaleiro CISE - Electromechatronic Systems Research Centre, Portugal</p> <p>SMART24-69: <i>A Refined Model for the Evaluation of Module Faults on the Performance of Photovoltaic Power Plants</i></p> <p>Yi Min Guo, Xin Zhang, Hong Tao Fan, Ya Chao Dong, Yao Jie Sun and Yu Wang Fudan University, China</p>

	<p>SMART24-133: <i>Wind Energy Production Assessment Using a Forecasting Technique</i></p> <p>Trung-Kien Hoang University of Science and Technology of Hanoi, Vietnam</p> <p>Lionel Vido CY Cergy Paris University, France</p> <p>SMART24-143: <i>Flexible Dye-Sensitized Solar Cell Nanostructures with Enhanced Performance</i></p> <p>Furqan Ahmad and Farooq Ahmed Dhofar University, Oman</p> <p>Faheem Ahmed and Nishat Arshi Jamia Millia Islamia, India</p>
<p>16H00-16H30</p>	<p>Coffee break</p>
<p>November 22 16H30-18H30 HUB 111</p>	<p>LS4: Lecture session on Sustainable Mobility Systems, Sensors, & Devices</p> <p>Chairs: Michael Schier (Germany) and Mohamed El Baghdadi (Belgium)</p> <p>SMART24-58: <i>The Implementation of an Autonomous Navigation System on a Self-Driving CART</i></p> <p>Lujain Ihsan AlSamhouri, Sumaya Alameri, Malak Eldosoky, Fatima Alhammadi, Neirah Mousa, Afra Al Jaber, Salih Majid and Ahmed Al-Gindy Canadian University Dubai, UAE</p> <p>SMART24-67: <i>Hydrogen in Off-Road Vehicle Applications</i></p> <p>Steffen Wieser, Linus Brunner, Michael Halfen, Florian Heckert and Mathias Bohm German Aerospace Center, Germany</p> <p>SMART24-68: <i>Mobile Hydrogen-Powered Charging Solution: Design & Demonstration</i></p> <p>Steffen Wieser, Markus Kordel, Marko Vehauc and John Greenough German Aerospace Center, Germany</p> <p>SMART24-76: <i>Fuel Cell Cargo Pedelec with Fast-Start Capabilities</i></p> <p>Daniel Melnik, Florian Heckert, Inga Burger, Jens Mitzel and Torsten Knori German Aerospace Center, Germany</p>

	<p>SMART24-77: <i>Low-Cost Sensor-Based Mobile System for Real-Time Tire Wear Emission Monitoring</i> Sven Reiland, Tobias Grein, Arens Lukas and Franz Philipps German Aerospace Center, Germany</p> <p>SMART24-105: <i>FCEV Electric and Thermal Energy Management and Data Communication to Expand Flexibility of Home Energy Management</i> Lukas Arens, Nies Reininghaus, Tobias Schneider, Michael Kroener, Michael Schier, Martin Vehse and Franz Philipps German Aerospace Center, Germany</p>
<p>November 22 16H30-18H30 HUB 112</p>	<p>LS5: Special Lecture session on Emerging Electrical Machines and Drive Systems in Advanced Materials, Condition/Fault Monitoring, and Thermal Management</p> <p>Chairs: Dawei Liang (UK) and Jing Ou (China)</p> <p>SMART24-151: <i>Influence of Retaining Sleeve Conductivity and Thickness on Rotor Eddy Current Loss in High-Speed Permanent Magnet Motors</i> Jinrong Zhang, Yu Wang, Hanju Ding, Yimin Guo and Yaojie Sun Fudan University, China</p> <p>SMART24-152: <i>Comparative Study of Air- and Iron-cored Halbach Machines Considering PM Demagnetization</i> Yang Li, Zi Qiang Zhu and Dawei Liang University of Sheffield, UK Simon Brockway, Maximilian Manss, Jonathan Lea and Yuan Ren Protean Electric Ltd, UK</p> <p>SMART24-153: <i>Comparative Study on Variable Leakage Flux Machines with Single- and Dual-Layer PM Arrangements</i> Hui Yang, Yuehan Zhu, Dabin Liu, Xiangxiang Ji and Heyun Lin Southeast University, China</p> <p>SMART24-154: <i>Reduction of Permanent Magnet Eddy Current Losses in High-Speed Permanent-Magnet Synchronous Motors Using a Three-Level Inverter</i> Xinyu Zhao, Jing Ou, Yingzhen Liu and Dianguo Xu Harbin Institute of Technology, China Dawei Liang University of Sheffield, UK</p>

	<p>SMART24-155: <i>Thermal Comparison of Dual Three-Phase PM Machines with Concentrated and Distributed Windings for Integrated On-Board EV Battery Charging</i></p> <p>Xiaolu Ma, Xu Liu and Yang Cao Hebei University of Technology, China</p> <p>Zi Qiang Zhu University of Sheffield, UK</p> <p>SMART24-156: <i>Thermal Modelling and Characteristics of Permanent Magnet Synchronous Machines with Single and Dual Rotors Accounting for Different Cooling Methods</i></p> <p>Dawei Liang, Zi Qiang Zhu and Zhitong Ran University of Sheffield, UK</p>
<p>November 22 16H30-18H30 HUB 113</p>	<p>LS6: Lecture session on Smart IT Tools-Governed Sustainable Systems</p> <p>Chairs: Michela Longo (Italy) and Rita Zgheib (UAE)</p> <p>SMART24-24: <i>A Smart IoT Based Water Desalination System: A Kuwaiti Case Study</i></p> <p>Hania Ghazi El-Kanj, Amash Alaslami, Abdulrahman Alfailakawi, Essa Alkandari and Abdulmuhsen Hajjeah Australian University, Kuwait</p> <p>SMART24-60: <i>Smart Sustainable Greenhouses in the GCC Countries; Energy Requirements & Economical Analyses</i></p> <p>Awni Al-Otoom and Salem Al-Naemi University of Doha for Science and Technology, Qatar</p> <p>SMART24-92: <i>Drone-based Landmines Detection System Using Solar Energy</i></p> <p>Djilali Hamza, Firza Ali, Yumna AlKhidir and Tara Kalantari Canadian University Dubai, UAE</p> <p>SMART24-100: <i>Solar-Aided Early Forest-Fire Detection Drone</i></p> <p>Djilali Hamza, Mohamed Zayed, Amna Aljaroodi and Karima Taha Canadian University Dubai, UAE</p> <p>SMART24-130: <i>Empower Hub: Sustainable Innovative Navigation and Smart Interior Design</i></p> <p>Manoon Nasri Abdalla, Mohamd Al Falasi and Haytham El-Messiry Canadian University Dubai, UAE</p>

SMART24-160: *Life Cycle Assessment and LCOE Optimization of 12 MW
Wind Farm*

Abdelkarim Tahtah, Driss Raouti, Rachid Meziane and Bouanane

Abdelkrim

University of Saida Dr Taher Moulay, Algeria

Lionel Vido

CY Cergy Paris University, France

Day 2: Saturday, November 23

November 23 8H00-17H00	Registration and information
November 23 9H30-10H30 HUB lobby	Plenary Session 3 Chairs: Michael Schier (Germany), Qinfen Lu (China) and Ahmed Masmoudi (Tunisia) <i>SMART24-PS3: History, Current Status, and Applications of Field Modulated and Magnetically Geared Machines</i> Zi Qiang Zhu University of Sheffield, UK
10H30-11H00	Coffee break
November 23 11H00-12H00 HUB lobby	Plenary Session 4 Chairs: Zi Qiang Zhu (UK), Imen Abdennadher (Tunisia) and Hao Chen (China) <i>SMART24-PS4: Novel Topologies and Applications of Linear Machines</i> Qinfen Lu Zhejiang University, China
12H00-14H00	Lunch
November 23 14H00-16H00 HUB 111	LS7: Lecture Session on EV Power Supply and Refueling Infrastructures Chairs: Frede Blaabjerg (Denmark) and Xiaoqiong He (China) <i>SMART24-50: Investigation of a Multi-level Coordinated Control Scheme for Vehicle-Garage-Grid System</i> Ruiqi Zhang, Hui Yang, Zirui Wang, Heyun Lin, Yifei Wang and Tao Chen Southeast University, China <i>SMART24-70: Leveraging Artificial Intelligence for Advanced Diagnostics and Life Cycle Assessment of Traction Batteries</i> Sahar Qaadan and Abdullah Ahmed German Jordanian University, Jordan Myrel Tiemann, Alexander Popp and Benedikt Schmuelling University of Wuppertal, Germany

	<p>SMART24-81: <i>Evaluation of Magnetic Field Exposure in Wireless Charging Systems for Autonomous Shuttles: Simulation vs. Real-World Measurements</i> M. Tiemann, A. David, B. Schmuelling, N. Haussmann, S. Stroka and M. Clemens University of Wuppertal, Germany</p> <p>SMART24-86: <i>An Enhanced Cloud-based Digital Twin State Monitoring for Smart Stationary Battery Energy Storage System</i> Md. Mahamudul Hasan, Thomas Geury and Omar Hegazy Vrije Universiteit Brussel, Belgium</p> <p>SMART24-131: <i>Wireless System-on-Cell for Smart Battery Management in EVs</i> Ana C. Barros Garcia, Adrian Alonso Vilar, Ana M. Cao, Lucia Costas, Juan J. Rodriguez Andina and Jose Farina Rodriguez University of Vigo, Spain Uxia Fernandez Garcia, Cintia M. Ramirez Navarro and Damian Gonzalez Figueroa Automotive Technology Centre of Galicia, Spain Mojtaba Ghodrati and Sergi Zapater Villar Universitat Politecnica de Catalunya, Spain Jorge Varela Barreras Imperial College London, UK</p> <p>SMART24-168: <i>A New Non-Recursive Analytical Calibration Approach for Li-Ion ECMs Based on Voltage Gradient and Sigmoid Function</i> Jorge Varela Barreras Imperial College London, UK Sergi Zapater Villar and Ramon Guzman Universitat Politecnica de Catalunya, Spain Damián González Figueroa Automotive Technology Centre of Galicia, Spain</p>
<p>November 23 14H00-16H00 HUB 112</p>	<p>LS8: Lecture Session on Machine and Deep Learning Techniques Applied to Sustainable Development Systems Chairs: Awni Al-Otoom (Qatar) and Said Elnaffar (UAE)</p> <p>SMART24-104: <i>Undersampled Random Forest: A Green Approach to Imbalanced Learning</i> Firuz Kamalov, Said Elnaffar and Ziad El Khatib Canadian University Dubai, UAE Aswani Kumar Cherukuri and Annapurna Jonnalagadda Vellore Institute of Technology, India</p>

	<p>SMART24-115: <i>Identifying Security Threats in the System Using Automated Security Logs</i> Yadidiah Kanaparthi, Tamer Mohamed Abdellatif, Ahmed Ali Seyam and Gandeva Bayu Satrya Canadian University Dubai, UAE</p> <p>SMART24-119: <i>Tunable CMOS Synapse Spiking Neural Networks for Low-Power Deep Learning Power Systems</i> Ziad El-Khatib and Sherif Moussa Canadian University Dubai, UAE</p> <p>SMART24-122: <i>Enhancing Cybersecurity in Smart Grid Systems through Advanced Log File Analysis with Machine and Deep Learning Techniques</i> Arul Kumar Natarajan, Mohammad Gouse Galety, Shirin Noekhah, Rajasoundaran Soundararajan, Sobirov Xurshed and Zikiryojev Xasan Samarkand International University of Technology, Uzbekistan</p> <p>SMART24-125: <i>Leveraging Deep Learning for Sustainable E-commerce: Reducing Opinion Spam in Smart Mobility Platforms</i> Shirin Noekhah, Przha Shamal, Mohammad Gouse Galety, Arul Kumar Natarajan and Kamilla Abdullaeva Samarkand International University of Technology, Uzbekistan</p> <p>SMART24-141: <i>Conserving Energy in Buildings by Detecting Hotspots through Clustering Approaches</i> Akib Mohi Ud Din Khanday, Galety Mohammed Gouse, K.A. Ajmath and Toxirov Timur Samarkand International University of Technology, Uzbekistan</p>
<p>November 23 14H00-16H00 HUB 114</p>	<p>LS9: Special Lecture Session on New trends in Electric Machines Design and Optimization (Part 1) Chairs: Amal Souissi (Tunisia) and Imen Abdennadher (Tunisia)</p> <p>SMART24-49: <i>A Permanent Magnet Linear Synchronous Motor with PCB Winding</i> Tenglong Feng, Yanxin Li and Qinfen Lu Zhejiang University, China</p> <p>SMART24-134: <i>Modelling of Six-Phase Electric Machine with a Hybrid Physical-Data Driven Approach for Digital Twin Development</i> Mohamed Amine Frikha, Yassine Benomar, Mohamed El Baghdadi and Omar Hegazy Vrije Universiteit Brussel, Belgium</p>

	<p>SMART24-135: <i>Multi-physics FEA Modelling and Features Investigation of a High Fault-Tolerant 48V Automotive Electric Propeller</i></p> <p>Hania Ghazi El-Kanj Australian University, Kuwait</p> <p>Ahmed Asmi and Ahmed Masmoudi University of Sfax, Tunisia</p> <p>SMART24-136: <i>Possibilities of NVH Analysis of a 200kW Drive for a Double-Decker High-Speed Train in Lightweight Construction</i></p> <p>Lars Weyh, Patrick Schwarz, Christian Wachter and Christian Weber German Aerospace Center, Germany</p> <p>SMART24-137: <i>NVH Analysis of a 200 kW Drive for a Double-Decker High-Speed Train in Lightweight Construction Using a 3D Scanning Laser Doppler Vibrometer</i></p> <p>Lars Weyh, Patrick Schwarz, Christian Wachter and Christian Weber German Aerospace Center, Germany</p> <p>SMART24-148: <i>An Efficient Design Optimization Method for Consequent-Pole Asymmetric Rotor Hybrid Interior Permanent Magnet Synchronous Machine</i></p> <p>Yu Ji, Qinfen Lu and Yanxin Li Zhejiang University, China</p>
<p>16H00-16H30</p>	<p>Coffee break</p>
<p>November 23 16H30-18H30 Room 111</p>	<p>LS10: Lecture session on Power Electronics—the Key Technology for the Emergence of Sustainable Applications</p> <p>Chairs: Frede Blaabjerg (Denmark) and Xiaoqiong He (China)</p> <p>SMART24-59: <i>Decoupled Control Strategy of a Back-to-Back Modular Multilevel Matrix Converter Operating in Low Frequency AC Transmission Systems</i></p> <p>Tomas Ravet, Cristobal Rodriguez and Matias Diaz University of Santiago of Chile, Chile</p> <p>SMART24-62: <i>Control of an AC-AC Modular Multilevel Converter for Medium Frequency Applications</i></p> <p>Tomas Ravet, Cristobal Rodriguez and Matias Diaz University of Santiago of Chile, Chile</p>

	<p>SMART24-71: <i>Efficient and Bidirectional Cascaded Auxiliary Power Module Design for Electric Trucks Using Hybrid Si, SiC, and GaN Technologies</i> Ramy Kotb, Sajib Chakraborty and Omar Hegazy Vrije Universiteit Brussel, Belgium</p> <p>SMART24-86: <i>Data-Driven Excellence: Fast and Accurate Digital Twin Models for Zero-Emission Long-Haul Vehicle Applications</i> Sajib Chakraborty, Sachin Kumar Bhoi, Mohammed Mahedi Hasan and Omar Hegazy Vrije Universiteit Brussel, Belgium Pascal Revereault and Pavel Masita Ricardo PLC, Belgium Elena Lazovik TNO, The Netherlands Florian Krietsch PTV Planung Transport Verkehr GmbH, Germany</p> <p>SMART24-93: <i>Conducted EMI in Modular Multilevel Converters Used in HVDC Renewable Energy Transmission</i> Djilali Hamza Canadian University Dubai, UAE</p> <p>SMART24-98: <i>Scalable Modular Energy Storage Solutions for Enhanced Local Grid Flexibility at Ports</i> Amin Hajizadeh, Mykolas Poska and Rokas Sukauskis Aalborg University, Denmark Victor Becerra University of Portsmouth, UK</p>
<p>November 23 16H30-18H30 Room 112</p>	<p>LS11: Special Lecture session on Future of Electric Mobility: Solutions to Increase its Penetration Chairs: Michela Longo (Italy) and Alberto Dolara (Italy)</p> <p>SMART24-96: <i>Efficiency and Magnetic Flux Comparison of Circular and DD Pads with Misalignment</i> Marco Biasizzo, Cristian Giovanni Colombo, Alberto Dolara, Michela Longo, Sonia Leva and Dario Zaninelli Politecnico di Milano, Italy</p> <p>SMART24-127: <i>Design and Experimental Characterization of a Low-Cost, Real-Time Health Monitoring System for Automotive Applications</i> Loris Botta, Alessandro Busacca, Massimo Caruso, Pasquale Cusumano, Rosario Miceli, Antonino Parisi, Riccardo Pernice and Luciano Curcio University of Palermo, Italy</p>

	<p>SMART24-163: <i>Thermal Characterization of a Power Loss Minimization Technique in Induction Motor Drives</i> Massimo Caruso, Antonino Oscar Di Tommaso and Rosario Miceli University of Palermo, Italy</p> <p>SMART24-164: <i>Optimizing WPT Receivers for Enhanced Performance and Cost Efficiency in Electric Vehicles</i> Cristian Giovanni Colombo and Michela Longo Politecnico di Milano, Italy Ryosuke Ota Tokyo Metropolitan University, Japan</p> <p>SMART24-167: <i>Predictive Model for the Circulation of EVs on Highways: Application to an Italian Case Study</i> Claudio Scarpelli, Emanuele Crisostomi and Massimo Ceraolo University of Pisa, Italy Alessandro Saldarini, Michela Longo and Valerio Apicella Politecnico di Milano, Italy</p> <p>SMART24-109: <i>Multi-Medium Handover Transactions with Interactive and Protected Self-Intelligence Principles for Unified Military Vehicular Sensor Networks</i> Soundararajan Rajasoundaran, Mohammad Gouse Galety, Natarajan Arul Kumar, Gaffarov Diyorbek and Sattorov Umedjon Samarkand International University of Technology, Uzbekistan</p>
<p>November 23 16H30-19H10 Room 113</p>	<p>LS12: Lecture Session Advanced Techniques and AI-Assisted Systems Dedicated to Sustainable Applications Chairs: Mohammad G. Galety (Uzbekistan) and Djilali Hamza (UAE)</p> <p>SMART24-64: <i>Multi-Layer Multi-Objective Optimization for Smart Home Energy Management System with Integration of User Satisfaction Concept</i> Khaled Khezzane and Mamadou Lamine Doumbia Universite du Quebec a Trois-Rivieres, Canada Farid Khoucha Ecole Militaire Polytechnique, Algeria Simon Hissem Higher College of Technology, UAE</p> <p>SMART24-90: <i>The Feasibility of EEG Based Multifactor Authentication</i> Luka Khorkheli, Stalin Abraham, Vihang Chakravarty, Shannaiah Aubrey Mae Inocencio and Haythem El-Messiry Canadian University Dubai, UAE</p>

	<p>SMART24-103: <i>Fire Process Detection Using Convolutional Neural Networks</i> Rustam Khamdamov, Temur Sakiyev and Olimjon Yalgashev Development of Digital Technologies and Artificial Intelligence, Uzbekistan</p> <p>SMART24-112: <i>Enhancing Academic Survey Creation: A Sustainable, Time-Saving Approach with GPT-4</i> Ruba Abualrous and Arash Kermani Kolankeh Canadian University Dubai, UAE</p> <p>SMART24-118: <i>Newton-Raphson method using HHL algorithm for Power Flow Quantum Computing</i> Ziad El-Khatib and Sherif Moussa Canadian University Dubai, UAE</p> <p>SMART24-121: <i>Beyond Smart: Rethink Sustainability for Climate Change</i> Maha Salman, Khalid Sabie and Zeineb Naouar Canadian University Dubai, UAE Samar Sabie University of Toronto, Canada</p> <p>SMART24-162: <i>Deep Learning for Smart Cities: Innovations, Challenges, and Future Directions</i> Nasir Abdul Jalil Universiti Teknologi Petronas, Malaysia Mikkay Wong Ei Leen and Narishah Mohamed Salleh Sunway University, Malaysia Nurul Hanis Aminuddin Jafry Universiti Kebangsaan Malaysia, Malaysia</p> <p>SMART24-166: <i>Sustainable Security Solutions for IoT: Enhancing Intrusion Detection Using AI and Machine Learning</i> Inaya I. Khan, Yadidiah Kanaparthi, Yash Ruchandani and Aliya Rizwan Canadian University Dubai, UAE</p>
<p>November 23 16H30-18H30 Room 114</p>	<p>LS13: Special Lecture Session on New trends in Electric Machines Design and Optimization (Part 2) Chairs: Amal Souissi (Tunisia) and Imen Abdennadher (Tunisia)</p> <p>SMART24-138: <i>Comparative Study of Hybrid Excited Axial Flux Switching Machine with Conventional and Phase Group Concentrated Coil Winding</i> Muhammad Usama Jabbar and Junaid Ikram COMSATS University, Pakistan Salman Ali, Fabrizio Marignetti, and Alessandro Silvestri University of Cassino and Southern Lazio, Italy</p>

SMART24-169: *A Novel Asymmetric Split-Spoke-Type Variable Flux Memory Machine*

Qiang Wei and Zi Qiang Zhu

University of Sheffield, UK

Jianghua Feng, Shuying Guo, Yifeng Li and Shouzhi Feng

CRRC Zhuzhou Institute Company Ltd., China

SMART24-170: *A Novel Asymmetric Variable Flux Memory Machine with Hybrid-Layer Permanent Magnets*

Qiang Wei, Zi Qiang Zhu and Seyedmilad Kazemisangdehi

University of Sheffield, UK

Jianghua Feng, Shuying Guo, Yifeng Li and Shouzhi Feng

CRRC Zhuzhou Institute Company Ltd., China

SMART24-171: *A Novel Asymmetric U-Shaped Variable Flux Memory Machine*

Qiang Wei, Zi Qiang Zhu and Seyedmilad Kazemisangdehi

University of Sheffield, UK

Jianghua Feng, Shuying Guo, Yifeng Li and Shouzhi Feng

CRRC Zhuzhou Institute Company Ltd., China

SMART24-139: *Comparison of Fractional-Slot Synchronous Machines with Different PM Arrangements*

Imen Abdennadher and Amal Souissi

University of Sfax, Tunisia

SMART24-140: *On the Investigation of the Features of SPMSMs Equipped with Sinusoidal Magnets with Emphasis on their Harmonic Content*

Amal Souissi, Imen Abdennadher and Ahmed Masmoudi

University of Sfax, Tunisia

November 23

20H00-22H00

CUD

CONFERENCE DINNER



Day 3: Sunday, November 24

<p>November 24 9H30-10H30 HUB lobby</p>	<p>Plenary Session 5</p> <p>Chairs: Zi Qiang Zhu (UK), Shiori Ikada (Germany) and Ahmed Masmoudi (Tunisia)</p> <p>SMART24-PS5: <i>ZEDU-1 – The World’s Most Environment Friendly Vehicle in Operation</i></p> <p>Michael Schier German Aerospace Center (DLR), Germany</p>
<p>10H30-11H00</p>	<p>Coffee break</p>
<p>November 24 11H00-12H00 HUB lobby</p>	<p>Best Papers Award Ceremony and Closing</p> <p>Chairs: Karim Chelli (UAE), Adam Fenech (UAE), Dima Jamali (UAE), Sherif Moussa (UAE) and Ahmed Masmoudi (Tunisia)</p> <div data-bbox="694 1232 1109 1579" data-label="Image">A golden trophy cup with three stars above it, surrounded by a laurel wreath. The trophy is centered in the lower half of the table cell.</div>