

CMSS 2026 Keynote Talk

Digital Twin Based Amalgamation of GPR and BER-Jaya Optimization for Intelligent MPPT Control Under Dynamic Solar Environments

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Muhammad Murtadha Othman received his B.Eng. (Hons) from Staffordshire University, England in 1998; M.Sc. from Universiti Putra Malaysia in 2000 and Ph.D. from Universiti Kebangsaan Malaysia in 2006. He was a former Director for the UiTM Solar Research Institute (SRI). He is also a Professor at the Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM), Malaysia. From 2024 to 2025, Professor Dr. Muhammad Murtadha Othman served as the Head of the Research Initiative Group (RIG)/Research Group (RG) at the College of Engineering, UiTM. In this leadership role, he was responsible for coordinating and strengthening research activities, fostering interdisciplinary collaborations, enhancing research productivity, and driving strategic initiatives to support innovation, knowledge generation, and impactful research outcomes within the College. He served as the Head of Department of the Centre for Electrical Power Engineering Studies (CEPES) from February 2009 to December 2010. From 2012 until 2020 he served two times as the Deputy Director for the collaborative research project under the auspices of Ministry of Energy, Green Technology and Water (KeTTHA), Malaysia, and also the Public Works Department (JKR), Malaysia. He also served as the Deputy Director for research on energy efficiency technology under the collaboration with Centre of Excellence for Engineering and Technology JKR (CREaTE), Malaysia. Both of the collaborative research projects were signed under the Memorandum of Agreement (MOA) with the consent to conduct research on the enhanced energy efficiency technology considering artificial intelligence (AI) for a large-scale building. He was previously appointed as the committee member in the Master of Electrical Power Engineering Programme, Faculty of Engineering, Universiti Putra Malaysia (UPM). He has over 23 years of research experience in energy demand/supply modelling particularly related to the field of power system operation and planning that composed of electric power generation, transmission and distribution. He has led several projects under the auspices of research grants sponsored by the government as well as industry. He recently completed working on a special research project task related to the Power Quality Problems Mitigation in Energy Storage System (ESS) in collaboration with Universiti Tenaga Nasional (UNITEN) and Universiti Kebangsaan Malaysia (UKM) under the Long Research Grant Scheme (LRGS), Ministry of Higher Education (MOHE). The outcome of this research also includes microgrid prototype model that will be used for training and research. Furthermore, he has published more than 300 technical papers in the international indexed journals and conferences. In 2020, his article related to the Enhanced Energy Efficiency Technology was selected as the winner for the prestigious QS (Quacquarelli Symonds) WOWNEWS Awards under the category of 'Top Articles', which was announced during QS APPLE 2020. On 15 November 2023, one of Professor Dr. Muhammad Murtadha Othman's research articles was recognized by Elsevier for its contribution to the United Nations Sustainable Development Goals (UN SDGs). The publication was identified as addressing some of the world's most pressing global challenges through impactful and sustainable research, reflecting his commitment to advancing scientific knowledge that supports sustainable development and societal well-being. This recognition highlights the relevance and international significance of his research contributions in addressing key sustainability issues aligned with the UN 2030 Agenda. He is a reviewer of IEEE transactions, IET journals, Elsevier and other international journals. He is also a member of IEEE Power and Energy (PES) and Institution of Engineering & Technology (IET). He has served to several local universities as the external examiners for PhD and MSc theses; and panel assessor for research grant proposals and postgraduate scholarship at the Ministry of Higher Education (MOHE), Malaysia and Latvian Science Council, Europe. His research interests are electrical power system, power system stability & reliability, power system deregulation, virtual power plant (VPP), enhanced energy efficiency technology, hybrid renewable energy, Stirling engines, energy storage system, electric vehicle (EV) charging station, active power filters, power quality and artificial intelligence (AI).