Driving into Tomorrow: Autonomous E-Mobility Meets Smart EV Charging Using AI and Machine Learning Strategies

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ABSTRACT

In the quest for a sustainable future, the convergence of electric vehicles (EVs), advanced battery technologies, and smart charging infrastructure is paramount. This presentation will explore the pivotal role of artificial intelligence (AI) and machine learning (ML) in optimizing the performance of EV batteries and charging systems. AI algorithms are employed to enhance battery management, predicting battery health, optimizing charging schedules, and maximizing energy efficiency. ML techniques enable dynamic charging strategies, adapting to grid conditions and user behaviors in real-time. Through data-driven insights, AI and ML empower smart charging networks to alleviate grid strain, integrate renewable energy sources, and reduce operational costs. As we drive into tomorrow, the synergy of EVs, smart charging, and AI promises a sustainable and efficient future of transportation, powered by intelligent energy solutions.

BIO

Prof. Sheldon S. Williamson received the Ph.D. degree (Hons.) in electrical engineering from the Illinois Institute of Technology, Chicago, IL, USA, in 2006. He is currently a Professor with the Department of Electrical, Computer and Software Engineering, and the Director of the Smart Transportation Electrification and Energy Research (STEER) Group, within the Faculty of Engineering and Applied Sciences, at Ontario Tech University, in Oshawa, Ontario, Canada. His current research interests include advanced power electronics, electric energy storage systems, and motor drives for transportation electrification and autonomous e-mobility. Prof. Williamson is also an NSERC Canada Research Chair (CRC) in electric energy storage systems for transportation electrification and is a Fellow of the IEEE.