MARQUETTE UNIVERSITY

Departmental Colloquium
Electrical and Computer Engineering

AI-Driven Portfolio Optimization: A Framework for Managing Heterogeneous Energy Assets using Autonomous AI Agents

Tuesday, March 24, 2026
2:00 pm – 3:00 pm
E-Hall 236

Reception to follow
3:00 pm – 3:30 pm
E-Hall 236

Dr. Rezoan Shuvro
Director of Data Science, SB Energy

ABSTRACT: The rapid proliferation of high-density computational loads and the aggressive expansion of renewable energy portfolios have shifted the critical path of grid stability and economic viability toward Independent Power Producers (IPPs) and utility-scale asset managers. As physical grid expansion becomes a primary bottleneck for the scalable deployment of AI infrastructure, the necessity for high-fidelity, autonomous orchestration of existing capacity is a strategic imperative. This presentation delineates a technical framework for an intelligent orchestration layer designed to synchronize multi-agent systems with a heterogeneous mix of energy assets. We examine the implementation of autonomous agent-based architectures to navigate the stochastic nature of Locational Marginal Pricing (LMP), Basis/Congestion (MCC), and Day-Ahead/Real-Time Market (DART) volatility. By integrating advanced weather forecasting for generation prediction and data-driven anomaly detection for preventive maintenance, this session demonstrates how autonomous agents optimize asset dispatch and portfolio-wide storage utilization. The discussion concludes by illustrating how AI-driven optimization ensures reliable operations and maximizes revenue through the systemic management of complex energy portfolios in high-demand environments.

BIOGRAPHY: Dr. Rezoan Ahmed Shuvro is a Director of Data Science at SB Energy (SoftBank Group), leading a team focused on Generative AI applications, autonomous AI agents, and machine learning models for energy forecasting and BESS optimization. His work involves the development of proprietary trading strategies and predictive architectures for node/hub LMP and congestion forecasting. Dr. Shuvro has over 15 years of experience in data science and analytics across the renewable energy, telecommunications, and software sectors. He earned his Ph.D. in Electrical and Computer Engineering from Marquette University and his M.S. from the University of New Mexico. His academic research, conducted under Prof. Majeed Hayat, utilized probabilistic Markov-chain Monte-Carlo methods to model cascading failures and interdependence in smart grids. Previously, he held senior data science roles at First Solar and major telecommunications providers. His work focuses on leveraging data-driven solutions to enhance grid resilience and optimize modern energy infrastructure.