Power Systems Engineering Research Center

PSERC WEBINAR

Probabilistic Forecasting of Market Signals via Generative AI

Lang Tong
Cornell University

A defining feature of generative artificial intelligence (AI) is its ability to produce artificial samples that resemble reality. This talk presents a novel time series forecasting approach under the generative AI paradigm. Derived from the classic Wiener-Kallianpur innovation representation of nonparametric time series, we establish the structure of generative probabilistic forecasting shown to generate samples that follow the conditional probability distribution of future samples given past observations. Applications in forecasting real-time locational marginal prices, price spread and its direction of interchange at proxies, and area control errors are presented to demonstrate the efficacy of the proposed generative forecastor against classical and leading machine-learning techniques, including some of the recent large language model-based techniques.

AUGUST 28, 2024 | **1:00-2:00 P.M. ET**

LINK TO WEBINAR

(10:00-11:00 A.M. PT)

Lang Tong is the Irwin and Joan Jacob Professor of Engineering at Cornell University and the Site Director of the Power System Engineering Research Center. His current research focuses on power system optimizations, power economics and electricity markets, and data analytics, machine learning, and AI technologies for power system operations. He received a B.E. in Automation from Tsinghua University and a Ph.D. from the University of Notre Dame. A Fellow of IEEE, he was the 2018 Fulbright Distinguished Chair in Alternative Energy.