

IEEE BDA Tutorial Series: Big Data & Analytics for Power Systems

Nikki Militello
PJM



Herman Ng
Liberty Utilities



Chetan Mishra
Dominion Energy



10:00 am-11:00 am, Wednesday, Sep.14, 2022, Pacific Time
(7:00 pm - 8:00 pm, Wednesday, Sep.14, 2022, Central European Summer Time)

Link: <https://asu.zoom.us/j/5513218843>

Topic1: PJM's Strategy for Data & Analytics

Speaker: Nikki Militello

Abstract: Data & Analytics is in the forefront of the electrical industry. This talk will walk through PJM's strategy for incorporating data and analytics deeper into the organization's framework including strengths, opportunities and an overview of key aspects of the strategy.

Bio: Nikki Militello, Manager – Applied Innovation, is responsible for the advancement of technologies to enhance efficiency and grid reliability of the high-voltage electric power system serving 65 million people in 13 states and the District of Columbia.

Militello assumed her current role in March of 2022. For the previous 11 years, she served in multiple roles across PJM in both the Markets and Operations divisions.

She holds a Bachelor of Science and Master of Science, both in mechanical engineering, from Drexel University.

Topic2: Regulated Utilities Analytics: Going from a Black & White TV to 4K

Speaker: Herman Ng

Abstract: With the launch of Algonquin-Liberty's first cloud-analytics environment in late 2021, we have already been able to advance our data journey with a few quick-win's for our customers and our business. In this talk, we will share our experience and results to-date through a few examples by leveraging Advanced Metering Infrastructure (AMI) data with other system data to further our safety, reliability and customer experience.

Bio: Herman Ng (S'00-M'05) is the Senior Director of Data Innovation & Decision Intelligence for the regulated services business of Algonquin-Liberty that serves electric, gas and water to 1,200,000 customers across 14 states/provinces in North America. He is bringing his expertise in strategic initiatives, advanced analytics and operations management to support Liberty's journey to become more data-driven in decision-making. Previously in telecommunications, gaming and consumer services, Herman successfully led complex cross-functional initiatives including the design and implementation of major productivity and organizational change programs.

Herman is a Canadian Professional Engineer and a Chartered Director in Corporate Governance. He was awarded a Bachelor of Applied Science in Engineering Science (Electrical Option) from the University of Toronto, a Master of Engineering from Simon Fraser University, and a Master of Business Administration from the Rotman School of Management.

Topic3: Data Driven Grid Dynamics Discovery and Analysis—Challenges and Lessons Learned

Speaker: Chetan Mishra

Abstract: Power system analysis has always heavily relied on having access to physics-based models for operation and planning used to conduct simulation studies. However, one of the biggest challenges faced by the system owners/operators today is not having access to transparent, portable and accurate dynamic models. With the recent growth of converter interfaced resources such as STATCOMs, solar PV, data centers, and so on, traditional analysis practices are challenging, specially for operations. What makes it even more difficult is that these resources respond significantly differently than well-understood synchronous machines in terms of time scales of dynamics, fault current, uncertainty in output, protection, and other phenomena. To make matters worse, controllers are rarely adapted to changing system conditions in real-world practice, resulting in a plethora of hidden dynamic performance issues waiting to manifest as large stability events.

To address these issues, Dominion Energy's Engineering Analytics & Modeling team has been working since 2020 on developing data-driven approaches to capturing otherwise hidden dynamic performance issues early on, as well as understanding the mechanism behind them through analysis of long term synchrophasor data. This webinar will discuss the difficulties encountered when working with actual measurements rather than simulation data.

Bio: Chetan Mishra is a senior engineer at Dominion Energy, where he is responsible for the synchrophasor analytics research. He has over 7 years of industry experience, with a focus on the challenges posed by increasing penetration of renewables to transmission system stability and reliability. Chetan obtained his M.S. and Ph.D. degrees in electrical engineering from Virginia Tech in Blacksburg, Virginia, in 2014 and 2017, respectively and his B.S. from the Indian Institute of Technology in Varanasi, India, in 2012. His research interests include dynamical systems and data driven analysis.