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

Machine Learning and Big Data Analytics in Power Distribution Systems

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11:00 am-12:15 pm, PST, Thursday, Mar. 28
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Abstract: This tutorial covers the applications of machine learning and big data analytics in electric power distribution systems. The value, velocity, volume, and variety of big data in power distribution systems will be discussed. The tutorial will briefly review the basics of unsupervised, supervised, and reinforcement-learning algorithms. A few important data-driven applications in electric power distribution systems will be presented. These applications include 1) Distribution system topology identification; 2) Anomaly detection in power distribution systems; 3) Spatial-temporal load and DER forecasting; 4) Predictive maintenance of distribution system equipment, and 5) Reinforcement Learning based Control in Power Distribution Systems.

Bio: Dr. Yu received his B.S. in Electrical Engineering from Tsinghua University, M.S. degrees in Electrical Engineering and Economics and Ph.D. degree from Iowa State University. Dr. Yu was a senior power system planner and project manager at Southern California Edison from 2011 to 2014.

Currently, he is a tenure track assistant professor of Electrical and Computer Engineering at the University of California, Riverside. Dr. Yu is the recipient of the Regents Faculty Fellowship and Regents Faculty Development award from University of California. He received a best paper award from the Second International Conference on Green Communications, Computing and Technologies and three best paper finalist awards from IEEE PES GMs.

Dr. Yu is the director of Smart City Innovation Laboratory at UCR. Dr. Yu is a cooperating faculty of the department of computer science. He currently serves as the co-chair for IEEE Big Data Applications in Power Distribution Networks Task Force. Dr. Yu currently serves as an editor for IEEE Transactions on Smart Grid and International Transactions on Electrical Energy Systems.

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