PSERC Power Systems Engineering Research Center

PSERC WEBINAR

The Role of Big Data Analytics in Predicting Power System Outages

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The topic of Big Data and associated analytics is relatively new (last 15 years). It became prominent as the huge amounts of data became available through the space exploration, weather forecasting and medical biogenetic investigations. Social media and outlets such as Google, YouTube, Facebook, Amazon and others have also faced similar problems of handling huge data sets. The power systems are now experiencing huge amount of data obtained through field measurements and external sources such as variety of weather data. This talk focuses on the role of Big Data analytics in managing and controlling future power system by predicting power system outages at different time horizons.

The initial discussion is about features if the different data sources that range from field measurements obtained through substation/feeder intelligent electronic devices to other data sets obtained from specialized commercial and/or government/state databases: weather data of different types, lightning detection data, seismic data, fire detection data, electricity market data, vegetation data, historical outage data, etc. It then points out that due to the massive amount of such data (petabytes) available in real time and through historical records, processing and management of such data requires revisiting data analytics used to correlate data and extract features already developed in the Big Data industries such as banking, insurance and health care. This talk ends with examples how the Big Data analytics are recently used to successfully predict transmission and distribution faults.

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PSERC.ORG/WEBINARS.ASPX (11:00-12:00 P.M. PST)

Dr. Mladen Kezunovic is the Regents Professor and Eugene E. Webb endowed Professor at Texas A&M University, USA where he has been employed since 1986. He serves in several leading roles at the university: Site Director, PSerc, and Director, Power Systems Control and Protection Lab. He is also the Principal Consultant, as well as President and CEO of XpertPower™ Associates, which has been providing consulting services for utility industry for over 25 years. He worked for Westinghouse Electric in the U.S.A. as a Systems Engineer on developing the first all-digital substation design during 1979-1980 and for Energoinvest Company in Europe as the Technical Lead for substation automation development during 1980-86. He was a consultant for EdF's Research Centre in Clamart, France in 1999-2000 and a Visiting Professor at the University of Hong Kong in fall of 2009. He was an Eminent Scholar at the Texas A&M University-Qatar in 2015/2016 and Special Visiting Researcher in Brazil in 2015-2017. He also acted as a consultant to over 50 utilities and vendors worldwide, and served three terms (2209-2013) as a Director on the Board of Directors of the Smart Grid Interoperability Panel (SGIP) representing research organizations and universities. He was recently appointed by the US Secretary of Energy to serve 2nd term on the Electricity Advisory Committee for the Department of Energy.

Dr. Kezunovic was a Principal Investigator on over 120 R&D projects, published more than 600 papers, two books and five book chapters, and gave over 120 invited lectures, short courses and seminars around the world. He is an IEEE Life Fellow and Distinguished Speaker, CIGRE Fellow, Honorary, and Distinguished Member, and Registered Professional Engineer in Texas. He is the recipient of the Inaugural 2011 IEEE Educational Activities Board Standards Education Award "for educating students and engineers about the importance and benefits of interoperability standards" and CIGRE Technical Committee Award for "remarkable technical contribution to the study committee B5, protection and automation" in 2013. He has received recognition from IEEE PSRC for 25 years of distinguished service.