SGC WEBINAR

ML/AI: Predicting, Managing and Mitigating Risk of Forced Outages
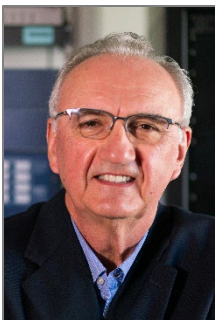
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The topic of Artificial Intelligence/Machine Learning (AI/ML) and associated analytics rose to prominence as the huge amounts of data became available through the space exploration, weather projections and medical biogenetic investigations. The humans deployed AI/ML to create data models to automate the data analysis, which may be infeasible to do manually or by simulations of physical systems only. Social media and commercial outlets such as Google, YouTube, Facebook, Twitter, Amazon and others have used for a while AI/ML the analysis of huge data sets to develop data models to predict consumer behavior. The power system operators are lately experiencing huge amounts of data obtained through field measurements and external sources such as variety of weather and other ambient data.

This talk focuses on the role of AI/ML data analytics in managing and controlling future power system by predicting power system outages at different spatiotemporal scales. The importance of outage prediction is explored, and examples how the AI/ML analytics are recently used to successful predict the risk of transmission and distribution faults are explored. The use of the risk prediction maps to manage the risk of forced outages and mitigate their impacts, as well as how the risk analysis can be used to schedule participation of distributed energy resources to mitigate outages is illustrated with a few examples. The future trends are also outlined.

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Register in advance here

Dr. Mladen Kezunovic has been with Texas A&M University, College Station, TX, USA, since 1986 where he holds titles of Regents Professor, Eugene E. Webb endowed Professor, and Site Director of "Power Engineering Research Center" consortium. He is also the Principal of XpertPower Associates, a consulting firm specializing in power systems data analytics for the last 30 years. His expertise is in protective relaying, automated power system disturbance analysis, computational intelligence, data analytics, and smart grids. He has authored over 600 papers and 10 books and book chapters, given over 120 seminars, invited lectures, and short courses, and consulted for over 50 companies worldwide. Dr. Kezunovic is an IEEE Life Fellow, and a CIGRE Fellow, Honorary and Distinguished Member. He is a Registered Professional Engineer in Texas. He is a member of the US National Academy of Engineering.