

Distributed Power Grid Operation and Control to Enable Resilience

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Abstract: Availability of data from massive sensors deployment in the DER-rich cyber-physical electric grid enables new monitoring and control strategies. Availability of additional sensor data brings its own challenges including scalability, data anomalies, real time processing, data fusion, data management and cyber-security management. The rapid growth of distributed energy resources and availability of data also motivate the transition from centralized to distributed computations for scalable and resilient solutions. To realize the potential advantages of distributed optimization, researchers have proposed various distributed optimization algorithms. This talk will focus on real time cyber-power data analytics, use cases for distributed optimization, and discusses current limitations and future research needs to support enabling the resilient control for the power grid in DER-rich environment.

Biography: Anurag K. Srivastava is a Raymond J. Lane Professor and Chairperson of the Computer Science and Electrical Engineering Department at the West Virginia University. He is also an adjunct professor at the Washington State University and senior scientist at the Pacific Northwest National Lab. He received his Ph.D. degree in electrical engineering from the Illinois Institute of Technology in 2005. His research interest includes data-driven algorithms for power system operation and control including resiliency analysis. In past years, he has worked in a different capacity at the Réseau de transport d'électricité in France; RWTH Aachen University in Germany; PEAK Reliability Coordinator, Idaho National Laboratory, PJM Interconnection, Schweitzer Engineering Lab (SEL), GE Grid Solutions, Massachusetts Institute of Technology and Mississippi State University in USA; Indian Institute of Technology Kanpur in India; as well as at Asian Institute of Technology in Thailand. He is serving as chair of the IEEE Power & Energy Society's (PES) PEEC committee, co-chair of the microgrid working group, vice-chair of power system operation SC, chair of PES voltage stability working group, chair of PES synchrophasors applications working group, co-chair of distributed optimization application in power grid, vice-chair of tools for power grid resilience TF, and member of CIGRE C4C2-58 Voltage Stability, C4.47/ C2.25 Resilience WG. Dr. Srivastava is serving or served as an editor of the IEEE Transactions on Smart Grid, IEEE Transactions on Power Systems, IEEE Transactions on Industry Applications, and Elsevier Sustainable Computing. He is an IEEE Fellow and the author of more than 300 technical publications including a book on power system security and 4 patents.

