IEEE Hawaii Power and Energy Society Chapter and University of Hawaii IEEE Student Branch
Seminar on Monday January 28, 2018 from 6:30PM to 8:00PM
Holmes Hall room 389, UH Manoa Campus
Pizza and beverages starting at 6:00PM
RSVP for pizza headcount to ekishore@ieee.org

Measuring and Enabling Electric Grid Resiliency

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Summary: Keeping the power on especially to the critical facilities such as hospitals and fire department during extreme adverse operating scenarios is essential. Recent events such as Ukraine attack and Hurricane Maria has exposed the vulnerabilities of the electric grid against extreme events. There is a need for a flexible and resilient grid to minimize the impact of component failures given adverse events. Availability of distributed resources and data from massive sensors deployment enables new monitoring and control strategies such as early alarm and diagnosis, predicative analysis, distributed and decentralized control, flexible and adaptive control for restoration. Phasor measurement units (PMUs) provide enhanced situational awareness and decision support in transmission systems. Distribution automation, microPMU and smart meters enables advanced visibility of distribution network. Big data is generated and monitored ubiquitously in smart grids, but largely unexploited in discovering knowledge and new solutions for critical power grid applications. Robust data analytics solutions including data science and machine learning are critical towards the optimized operation to enhance the resiliency of the smart grid. Availability of additional sensor data brings its own challenges including data anomalies, real time processing and cyber-security management. This talk will focus on real time data analytics to enhance situational awareness and decision support for enabling resiliency of the power grid and associated challenges and opportunities.

Biography: Anurag K. Srivastava is an associate professor of electric power engineering at Washington State University and the director of the Smart Grid Demonstration and Research Investigation Lab (SGDRIL) within the Energy System Innovation Center (ESIC). He received his Ph.D. degree in electrical engineering from the Illinois Institute of Technology in 2005. In past years, he has worked in different capacity at the Réseau de transport d´électricité in France; RWTH Aachen University in Germany; PEAK RC, Idaho National Laboratory, Pacific Northwest National Lab, 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. His research interest includes data-driven algorithms for power

system operation and control including resiliency analysis. Dr. Srivastava high impact research projects resulted in tools installed at the utility control center supported for more than $50M by US Department of Energy, National Science Foundation, Siemens Corporate Research, Electric Power Research Institute, Schweitzer Engineering Lab, Power System Engineering Research Center, Office of Naval Research and several National Labs. He is a senior member of the IEEE, vice-chair of the IEEE Power & Energy Society's (PES) PEEC committee, co-chair of the microgrid working group, secretary of power system operation SC, chair of PES voltage stability working group, and chair of PES synchrophasors applications working group. He organized NSF sponsored "Data analytics workshop for the power grid resiliency" in 2018, Siemens sponsored "data analytics for the smart grid" workshop in 2017, North American Power Symposium in 2014, and IEEE sponsored workshop on Testing and validation of synchrophasor devices and applications in 2012. Dr. Srivastava is an editor of the IEEE Transactions on Smart Grid, IEEE Transactions on Power Systems, IEEE Transactions on Industry Applications, IEEE Transactions on Industrial Informatics, IET Generation, Transmission and Distribution, Journal of Modern Power Systems and Clean energy and Elsevier Sustainable Computing. He is an IEEE distinguished lecturer and has delivered 30+ keynotes/ tutorials. He is author of more than 300 technical publications including a book on power system security and 3 patents.