



Electrical and Computer Engineering

Fall 2019 Seminar Series

Title

A PMU-Based Method for Power System Monitoring and Control

Tuesday, December 10

11:00 a.m. – 12:00 p.m.

Research 1 - 150C

Abstract

In modern power systems, the supervisory control and data acquisition (SCADA) system has been used to estimate the state of a power system to ensure their security and stability. However, the update rate of SCADA measurements is relatively low (3-5 seconds) and the data is not synchronized, making the real-time monitoring and control of power systems difficult. The Phasor Measurement Units (PMU) deployed across the system can provide real-time, highly-sampled synchronized data, which provide unique opportunities to develop measurement-based methods for power system online monitoring and control. In this talk, I will present a PMU-based methodology that can accurately estimate the dynamic system state matrix of a power system in near real time, based on which wide applications including topology error detection, stability assessment, inter-area mode identification and wide-area damping control are explored. Particularly, the proposed method is robust to the variation of network topology change, missing PMU and PMU measurement noise.



Dr. Xiaozhe Wang, Assistant Professor, McGill University

Biography

Xiaozhe Wang is currently an Assistant Professor in the Department of Electrical and Computer Engineering at McGill University. Before joining McGill in January 2016, she was a postdoctoral associate at Massachusetts Institute of Technology working with Prof. Konstantin Turitsyn. She received her Ph.D. degree from the School of Electrical and Computer Engineering at Cornell University in January 2015 with a minor in Applied Mathematics. Her advisor was Prof. Hsiao-Dong Chiang. She received her M.Eng. degree from the same school at Cornell University in 2011 and B.S. degree from the Department of Information Science & Electronic Engineering at Zhejiang University, Hangzhou, China, in 2010. Her research interests are in the general areas of power system stability and control, uncertainty quantification in power system security and stability, and wide-area measurement system (WAMS)-based detection, estimation, and control. She is an Associate Editor of IEEE Transactions on Power Systems, IEEE Power Engineering Letters, International Journal of Electrical Power and Energy Systems, and IET Generation, Transmission & Distribution.