Electrical & Computer Engineering Seminar

Dr. Jun Yan

Associate Professor at the Concordia Institute for Information Systems Engineering of Concordia University, Montreal, Canada

Will present a talk entitled:

The Role of Artificial Intelligence in Smart Grid Security

April 28th, 2023

Friday 4pm

CAMP 176

Also via zoom: https://clarkson.zoom.us/j/97883816982?pwd=SkFaQlUraW40QVByM2orS05FRU9RQT09

Abstract: The smart grid is envisioned to be a modernized infrastructure for reliable, affordable, and sustainable energy, where artificial intelligence (AI), like in many other sectors, has been a key driving force in grid modernization. Despite promises of smart technologies – many of which are of AI-powered, challenges arise from various aspects of grid security and resilience. The seminar will discuss the role of smart technologies in the context of smart grid, where AI can become tools for security, targets in security, and threats against security. We will first review notable cyber-physical vulnerabilities in the smart grid, where trends like digitalization, electrification, and decentralization are also reshaping the landscape with smart technologies. Case studies of reinforcement learning and adversarial learning techniques will be presented to review the benefits and implications of AI in smart grid security. We will also discuss some reflections and directions to improve the future grid's preparedness and resilience against smart attacks with smarter defenses.

Short Bio. Dr. Jun Yan is currently an Associate Professor at the Concordia Institute for Information Systems Engineering of Concordia University, Montreal, Canada. He is a founding member of Concordia's Security Research Centre (SRC) and the Applied AI Institute (AI2), where he leads several R&D initiatives on AI and security for smart critical infrastructures. He received his Ph.D. in Electrical Engineering (with

Excellence in Doctoral Research) from the University of Rhode Island and joined Concordia University in 2018, where he received an early tenure promotion in 2022.

His research focuses on computational intelligence and its applications in the digital transformation of infrastructures like smart grids and smart cities. He has published over 100 peer-reviewed articles in related areas and received best paper awards from IEEE ICC and IEEE WCCI.

Website: https://www.concordia.ca/faculty/jun-yan.html

Google Scholar: https://scholar.google.com/citations?user=3Yi1ZhsAAAAJ&hl=en

**Co-Sponsored by IEEE student branch and HKN*
