Wichita State University
Department of Industrial, Systems, and Manufacturing Engineering
ISME Colloquium Presentation

Dr. Visvakumar Aravinthan
Associate Professor
Department of Electrical Engineering and Computer Science, Wichita State University

Title: Reliability Considerations in Cyber-Physical Energy Systems
Date: Friday – February 1, 2019
Time: 11:00 am – 12:00 noon
Location: Engineering Building (EB) Room 211

Abstract

Modernization of the power system has gained substantial momentum in the last decade, especially in terms of integration of renewable energy resources and automation. This has resulted in greater dependency in real-time decision tools with two way communication. It is important to understand the effect of decision tools and communication on reliable operation of the power system. This talk focuses on developing reliability models for cyber-enabled power systems. Effects of communication failure and decision manipulations on power system reliability computation is presented. Finally, a three-layer approach based on physical layer, decision layer and communication and coupling layer is presented for to reliability modeling and evaluation. The cyber and power layers are interconnected by the information layer.

Speaker Biography

Visvakumar Aravinthan received his Ph.D. in electrical engineering from Wichita State University, Wichita, KS, USA, in 2010. He received his Bachelors and Masters degree in Electrical Engineering from University of Moratuwa, Sri Lanka in 2002 and 2004 respectively and Ph.D. in Electrical Engineering from Wichita State University in 2010. He is currently an Associate Professor with Wichita State University. His research interests include power distribution automation, cyber-physical energy systems, power system reliability and resiliency. Dr. Aravinthan is an IEEE Senior Member. He is currently serving as the secretary of IEEE-PES Reliability, Risk and Probability Applications Subcommittee, Chair of the electric vehicle working group within IEEE-PES renewable technologies subcommittee and the Chair of the Task Force on reliability consideration in emerging cyber physical energy systems within IEEE-PES Reliability, Risk and Probability Applications Subcommittee.