

Energy and Power Group

WEEKLY SEMINAR SERIES – FALL 2018

Monday, October 15th, 2018, 3:00 – 4:00 p.m., ETB 1003

Microgrid Control for Black Start in Distribution Systems



Ogonnaya Bassey

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Abstract

Most service restoration methods in the electricity grid focus on coordinating the bulk power system. In recent years, more attention has been paid on how distributed energy resources and the microgrid concept could be used to implement service restoration in the smart distribution systems in the event of blackouts or outages due to localized natural disasters. Developing distribution system restoration solutions could potentially decrease downtime or backup generation needs of critical facilities such as hospitals, data centers, cell towers given that these distributed energy resources could be designed as ‘plug-and-play’ modules with significantly lower start-up time compared to the generators used in the bulk power system. In this pitch, we present some of the considerations necessary for successful implementation of black start in distribution systems using microgrids and how these considerations could be modeled as a mathematical programming problem. We also highlight the importance of planning black start in islanded microgrids by considering the primary, secondary and tertiary control of the resources in the system.

Biography

Ogonnaya Bassey received a bachelor’s degree in electrical engineering from the University of Nigeria, Nsukka in 2013. He is currently a Ph.D. student in the Department of Electrical and Computer Engineering at Texas A&M University, College Station, Texas. His interests include cyber-physical systems modeling and simulation, distribution systems and microgrids, data science and embedded systems.

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A-Hack-of-the-Drones: Takeaways from a Cyber-Physical Security Competition



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Abstract

Commercial Off-the-Shelf (COTS) Small, Unmanned Aerial Systems (SUAS) have become ubiquitous, and the potential threat they represent in the hands of individual or state-sponsored actors grows daily. Two Texas A&M teams, The "A" Team, and Team GigEmBytes, won the top prize in an Army-sponsored "A-Hack-of-the-Drones" hackathon challenge for innovative counter-sUAS solutions. Teams focused on detection, nullification, cyber-effects, and elimination to counter generic COTS sUAS threats. Representatives from the teams will discuss the challenges of cyber-physical security and specific takeaways for electrical engineers.

Biography

Megan Culler is a senior undergraduate student in electrical engineering, with minors in Computer Science and Cybersecurity. She works with Prof. Davis studying security for power systems and industrial control systems. During the competition, she focused on sensor nullification and GPS data acquisition and visualization.

Edan Coben is a senior undergraduate student in electrical engineering and a minor in mathematics. With a degree emphasis on electrical power systems, he works with Professor Kate Davis researching electric grid security. As a part of one of the winning teams, he focused on detection, tracking, and estimation of enemy drones.