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CECS Seminar

“Electric Power to the People: Secure & Resilient Cyber-Physical Systems in the Age of Renewable Energy”

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Friday, July 15th
10:00 - 11:00 a.m. PST
Location: EH 2430



Abstract: Rapid advancements in power electronics along with the increasing penetration of distributed energy resources (DERs) are transforming the electric power grids. Furthermore, increasing types and number of loads and electric transportation are stressing the network. Overall, the power system is facing unprecedented changes in operation and control as more and diverse sources and loads are being connected to this complex cyber-physical energy system. In light of this modernization, and due to the growing number of Internet-of-things (IoT) connected controllers, and the use of communication and control interfaces, making cyber-physical energy systems resilient to high-impact, low-probability cyber-physical adverse events, such as cyber-attacks, is a major priority for power grid operations. Such incidents, if left unabated, can intensify and elicit system dynamics instabilities, eventually causing outages and system failures. In this talk, we will give an overview of the research of the Secure Next Generation Resilient Systems (SENTRY) lab (sentry.kaust.edu.sa) at KAUST, presenting different methodologies, in the age of renewable energy, contributing towards building secure and resilient cyber-physical grids.

Biography: Charalambos Konstantinou is an Assistant Professor of Computer Science (CS) and Affiliate Professor of Electrical and Computer Engineering (ECE) at the Computer, Electrical and Mathematical Science and Engineering Division (CEMSE) of King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia. He is the Principal Investigator of the SENTRY Lab (Secure Next Generation Resilient Systems - sentry.kaust.edu.sa) and a member of the Resilient Computing and Cybersecurity Center (RC3 - rc3.kaust.edu.sa) at KAUST. Before joining KAUST in 2021, he was an Assistant Professor with the Center for Advanced Power Systems (CAPS) at Florida State University (FSU). His research interests are in secure, trustworthy, and resilient cyber-physical and embedded IoT systems. He is also interested in critical infrastructures security and resilience with special focus on smart grid technologies, renewable energy integration, and real-time simulation. He received a Ph.D. in Electrical Engineering from New York University (NYU), NY, in 2018, and a M.Eng. Degree in Electrical and Computer Engineering from National Technical University of Athens (NTUA), Greece, in 2012.