



## Cyber-Physical Systems (CPS) Seminar Series

**Title: Self-organizing UAV Networks for Providing On-demand Sensing and LTE Connectivity to First Responders**

**Speaker: Dr. Eugene Chai, NEC Lab**

**Abstract:** Autonomous multi-UAV networks will revolutionize the design of systems solutions for civil, entertainment, public services, security and other critical application areas. At NEC Labs, we are particularly interested in the application of such multi-UAV networks to public safety networks. Our goal is simple: how do we design, implement and deploy a reliable and flexible multi-UAV network that can meet the demands of first-responder networks?

In this talk, I will introduce SkyLiTE, our multi-UAV network that is designed for public safety applications. SkyLiTE is one of the first efforts at a fully autonomous, untethered multi-UAV network that can be deployed on demand in challenging scenarios to achieve public safety mission objectives. Our SkyLiTE prototype consists of three important components: SkyHAUL, which is a high bandwidth, millimeter wave backhaul network that achieves 1Gbps of bandwidth across the entire multi-UAV network; SkyCORE, a UAV-optimized, lightweight LTE Evolved Packet Core network; and SkyRAN, a full-fledged LTE radio access network. SkyLiTE is deployed either to complement and augment existing terrestrial cellular networks in public safety scenarios, or as a standalone LTE network in areas not covered by fixed infrastructure.

**Biography:** Eugene Chai is a researcher in the Mobile Communications and Networking Department of NEC Laboratories America, located in Princeton NJ. His recent research activities include managing LTE in unlicensed networks, enabling wide-area sensing and communications on large multi-UAV platforms, and designing new low power and battery-free communication technologies for smart-sensing and IoT applications. He holds numerous patents on his research and his work has been published in major international conferences.



**Date: Friday, Oct. 19, 2018**

**Time: 12:00-13:00PM**

**Location: MAC Lab, LW Suite 800**