



PAWR Project Office

Securing Cellular and Open RAN Systems through Real-World Experimentation on POWDER

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This talk will highlight our research to advance the security and situational awareness of cellular and Open RAN systems utilizing the POWDER platform. We will first discuss our work on collecting real-world over-the-air cellular traces under diverse benign and adversarial conditions, including UE mobility, and using these measurements to develop machine-learning techniques for detecting Fake Base Stations (FBSes) and multi-step attacks from the UE side. We will then present our extension to network-side FBS detection, where we modified and integrated srsRAN components within POWDER to collect core-network signaling and UE measurement data and evaluate detection techniques. The talk will also describe our experiments on FBS localization and physics-guided modeling of benign base-station signal propagation. Finally, we will discuss our use of POWDER's Open RAN profiles to develop and evaluate xApps for integrated network sensing.