



## ***Transforming the Resilience of Critical Infrastructure Systems and Communities***

**Resilience Week Objective:** A Symposium dedicated to advancing the interdisciplinary dialog on policy and technologies that accelerate critical infrastructure and community resilience to unexpected and malicious threats.

### **SESSION 01: ARTIFICIAL INTELLIGENCE FOR RESILIENT CONTROL SYSTEMS**

#### **SESSION CHAIRS**

- Kevin Schultz (Johns Hopkins University Applied Physics Laboratory)
- Kris Vellez (Oak Ridge National Laboratory)
- Quanyan Zhu (New York University)

#### **SESSION ABSTRACT**

Modern distributed systems, including SCADA systems and the Internet of Things (IoT), promise increased granularity in the ability to monitor and control large scale systems. The costs of this access include increased sensor/network traffic, unexpected interactions, and an increase in the attack surface. In general, this overall increase in complexity will require novel approaches to monitor, diagnose, and control these systems in the face of the above issues. These approaches will need to efficiently leverage large volumes of data (real and/or synthetic) and AI techniques to cope with these emerging challenges.

#### **TOPICS**

We are soliciting submissions for applications of the following topics in the field of resilient control:

- **Machine Learning:** Neural networks (e.g., deep-learning), kernel methods, or other ML techniques that perform state diagnosis, control/reconfiguration, intrusion detection, etc.
- **Network Science and Graph Theory:** Graph analytics, graph signal processing, and related techniques that process networked signals for analysis and control
- **Game Theory:** Data and model-based approaches to distributed multi-user/multi-component interactions that seek to control, detect, and mitigate system under adversarial environments.
- **Visualizations and Human Machine Interaction:** Novel concepts for analysts and operators to cope with the volume of data presented by networked systems tied to one of the above topical areas
- **Others:** Concepts that do not fit above, but otherwise leverage AI approaches

#### **SUBMISSION INFORMATION**

Authors interested in this special session can submit their paper at <https://resilience.inl.gov/resilience-week/submission-information/>

[www.resilienceweek.com](http://www.resilienceweek.com)

