

Title: Cyber Security of Industrial Control Systems

Abstract:

Industrial Control Systems play an important role in the monitoring, control, and automation of critical infrastructure such as water treatment and distribution, power generation and transmission, and intelligent transportation. Recent years have seen a number of high profile cyber attacks on such infrastructure. We will discuss the challenges of securing such infrastructures, including those emerging from the convergence of regular IT systems and Internet of Things with technologies underpinning control systems. We will look at a range of vulnerabilities, how attacks exploit such vulnerabilities and their impact on critical properties such as safety, reliability and resilience. We will also discuss how to defend against cyber attacks, the complexities and challenges that arise when doing so and how to architect secure systems. We will conclude by considering the problems posed by the scale, connectivity and complexity of emerging and future infrastructures and the fundamental research questions to be addressed to ensure that they are secure and hence safe and resilient.