Development of Attack Detection Scheme for a Class of Cyber-Physical Systems

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ABSTRACT
In this paper, a novel attack detection and estimation scheme is proposed for a class of cyber-physical system – networked control systems. On the network side, the proposed attack detection scheme is capable of capturing the abnormality of the traffic flow in the communication links. The flow is modeled as a stochastic linear discrete-time system with random delayed measurements. Upon the detection of the attack, an estimation scheme is proposed in order to approximate the flow injected or dropped by the attacker. On the physical system side, we propose a novel controller that stabilizes the system under different network conditions. Simulations are performed to verify the theoretical claims.

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