

Robust Control of Cyber-Physical System under Cyber Attacks Based on Invariant Tubes

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Abstract : The rapid development of cyber-physical systems significantly influences modern control systems introducing a whole new range of applications of control systems but also putting them under new challenges to ensure their resiliency to possible cyber attacks, either in the form of data integrity attacks or deception attacks. This paper presents a model predictive approach to the control of cyber-physical systems robust to cyber attacks. We assume that a cyber attack can be modelled as an additive disturbance that acts in the measuring channel. For such a system, we designed a tube-based predictive controller based. The performance of the designed controller has been verified in Matlab/Simulink environment.

Keywords : control systems, cyber attacks, resiliency, robustness, tube based model predictive control

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