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Secure Impulsive Synchronization Control of Multi-agent Systems Under Deception Attacks [☆]

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Abstract

This paper is concerned with secure synchronization of multi-agent systems under deception attacks in the impulsive control framework. False data is injected into sensor-to-controller channels, which causes the transmittal signals being changed. Some stochastic variables obeying the Bernoulli distribution associated with communication channels between neighbouring agents are proposed to describe the case whether channels are suffered from the attack. A distributed impulsive controller is proposed and bounded synchronization, caused by false data injection is studied. Several mean-square bounded synchronization conditions are derived and the error bound is also given. Finally, two examples are provided to verify the theoretical results.

Keywords: bounded synchronization; multi-agent systems; false data injection; deception attack; secure control; impulsive control

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