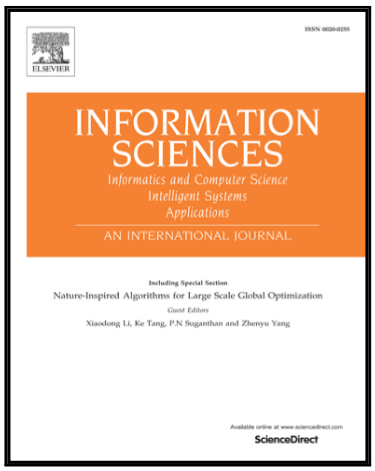
Accepted Manuscript



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

Wangli He, Xiaoyang Gao, Weimin Zhong, Feng Qian

PII: S0020-0255(18)30277-9
DOI: 10.1016/j.ins.2018.04.020
Reference: INS 13563

To appear in: *Information Sciences*

Received date: 25 January 2018
Revised date: 24 March 2018
Accepted date: 3 April 2018

Please cite this article as: Wangli He, Xiaoyang Gao, Weimin Zhong, Feng Qian, Secure Impulsive Synchronization Control of Multi-agent Systems Under Deception Attacks, *Information Sciences* (2018), doi: 10.1016/j.ins.2018.04.020

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

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

Wangli He[a], Xiaoyang Gao[a], Weimin Zhong[a], Feng Qian[a]

[a]*Key Laboratory of Advanced Control and Optimization for Chemical Processes, East China University of Science and Technology, Shanghai 200237, China*

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 neigbouring 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

☆This work was supported by the National Natural Science Foundation of China (61773163),Fundamental Research Funds for Central Universities (222201717006) , Natural Science Foundation of Shanghai (17ZR1444600), Young Elite Scientists Sponsorship Program by CAST (2016QNRC001), Shanghai Rising-Star Program(18QA1401400) and the 111 Project (B17017).

Email addresses: wanglihe@ecust.edu.cn (Wangli He), gaoxiaoyang919@126.com (Xiaoyang Gao), wmzhong@ecust.edu.cn (Weimin Zhong), fqian@ecust.edu.cn (Feng Qian)

ACCEPTED MANUSCRIPT

Download English Version:

https://daneshyari.com/en/article/6856317

Download Persian Version:

https://daneshyari.com/article/6856317

Daneshyari.com