

Institutional Sign In

BROWSE

MY SETTINGS

GET HELP

WHAT CAN I ACCESS?

SUBSCRIBE

Need Full-Text
access to IEEE Xplore for your organization?

REQUEST A FREE TRIAL >

Browse Journals & Magazines > IEEE Transactions on Industri... > Volume: 63 Issue: 2

Tracking Control of Networked Multi-Agent Systems Under New Characterizations of Impulses and Its Applications in Robotic Systems

Related Articles

Stability of networked control systems

Stability of model-based networked control systems with time-varying transmissio...

Stability of Networked Control Systems With Uncertain Time-Varying Delays

[View All](#)

Sign In or Purchase
to View Full Text

13
Paper
Citations

485
Full
Text Views

5
Author(s)

Yang Tang ; Xing Xing ; Hamid Reza Karimi ; Ljupco Kocarev ; Jürgen Kurths

[View All Authors](#)

Abstract	Authors	Figures	References	Citations	Keywords	Metrics	Media
-----------------	---------	---------	------------	-----------	----------	---------	-------

Abstract:

This paper examines the problem of tracking control of networked multi-agent systems with multiple delays and impulsive effects, whose results are applied to mechanical robotic systems. Four kinds of impulsive effects are taken into account: 1) both the strengths of impulsive effects and the number of nodes injected with impulses are time dependent; 2) the strengths of impulsive effects occur according to certain probabilities and the number of nodes under impulsive control is time varying; 3) the strengths of impulses are time varying, whereas the number of nodes with impulses takes place according to certain probabilities; 4) both the strengths of impulses and the number of nodes with impulsive control occur according to certain probabilities. By utilizing the comparison principle, criteria are established for these different cases and a relationship between the frequencies (occurrence probabilities) of impulses and systems' parameters is unveiled. Finally, an example for tracking control of robotic systems is provided to show the effectiveness of the presented results.

Published in: IEEE Transactions on Industrial Electronics (Volume: 63, Issue: 2, Feb. 2016)

Page(s): 1299 - 1307

INSPEC Accession Number: 15697118

Date of Publication: 08 July 2015

DOI: 10.1109/TIE.2015.2453412

ISSN Information:

Publisher: IEEE

Sponsored by: IEEE Industrial Electronics Society

☰ Contents

Download PDF	<h3>I. Introduction</h3> <p>Recent years have witnessed increasing attention for dynamics analysis of networked systems such as leaderless or leader-following consensus, synchronization, filtering, flocking, coordination, etc. The importance of these phenomena has been widely verified or observed in various applications in physics, neuroscience, biology, and engineering [1]– [8]. As a challenging application, coordination of networked systems such as robotic systems and vehicles, has attracted wide research interests in automotive engineering and industry [2], [9]– [12].</p> <p style="text-align: center;">Read document</p> <hr/> <p>Keywords</p> <p>IEEE Keywords Stochastic processes, Multi-agent systems, Time-varying systems, Control systems, Robot kinematics, Couplings</p> <hr/> <p>INSPEC: Controlled Indexing probability, delays, multi-agent systems, multi-robot systems, networked control systems</p> <hr/> <p>INSPEC: Non-Controlled Indexing probabilities, tracking control, networked multiagent systems, delays, impulsive effects, mechanical robotic systems, impulsive control, time varying impulse strength</p> <hr/> <p>Author Keywords time-delays, Tracking control, Leader-following consensus, multi-agent systems, robotic systems</p>	<div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 10px;"></div> Full Text Abstract Authors Figures References Citations Keywords Back to Top
Download Citations		
View References		
Email		
Print		
Request Permissions		
Export to Collabratec		
Alerts		
	<p>Authors</p> <p>Author image of Yang Tang</p> <p>Yang Tang Key Lab. of Adv. Control & Optimization for Chem. Processes, East China Univ. of Sci. & Technol., Shanghai, China</p> <p>Yang Tang (M'11) received the B.S. and Ph.D. degrees in electrical engineering from Donghua University, Shanghai, China, in 2006 and 2010, respectively.</p> <p>From 2008 to 2010, he was a Research Associate with The Hong Kong Polytechnic University, Kowloon, Hong Kong. From 2011 to 2013, he was an Alexander von Humboldt Research Fellow with Humboldt University of Berlin, Berlin, Germany. He was a Visiting Research Fellow with Brunel University, London, U.K., in 2012. From 2013 to 2015, he was a Research Scientist with the Potsdam Institute for Climate Impact Research, Potsdam, Germany, and the Humboldt University of Berlin. Since 2015, he has been a Professor with East China University of Science and Technology, Shanghai, China. He has published more than 50 refereed papers in international</p>	

[Personal Sign In](#) | [Create Account](#)**IEEE Account**

- » [Change Username/Password](#)
- » [Update Address](#)

Purchase Details

- » [Payment Options](#)
- » [Order History](#)
- » [View Purchased Documents](#)

Profile Information

- » [Communications Preferences](#)
- » [Profession and Education](#)
- » [Technical Interests](#)

Need Help?

- » **US & Canada:** +1 800 678 4333
- » **Worldwide:** +1 732 981 0060
- » [Contact & Support](#)

[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [Sitemap](#) | [Privacy & Opting Out of Cookies](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.
© Copyright 2016 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.