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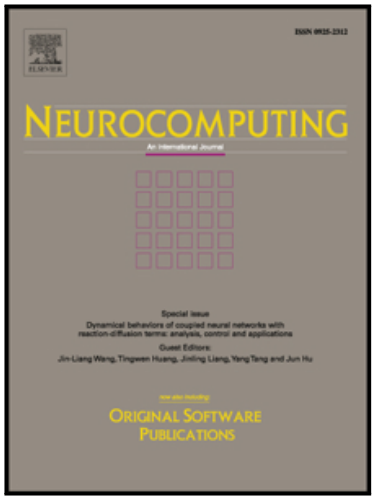

Distributed Asynchronous Event-triggered Consensus of Nonlinear Multi-agent Systems with Disturbances: An Extended Dissipative Approach

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Distributed Asynchronous Event-triggered Consensus of Nonlinear Multi-agent Systems with Disturbances: An Extended Dissipative Approach

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Abstract

This paper investigates the distributed asynchronous event-triggered consensus problem for a class of nonlinear multi-agent systems. The extended dissipative performance index is introduced for solving the consensus problem with disturbances, which can provide H_∞, $L_2 - L_\infty$, passivity and dissipative consensus performances by tuning weighting matrices, respectively. Based on model transformation, sufficient consensus conditions are developed and the desired consensus controllers are designed such that the extended dissipative performance can be achieved. Two illustrative examples are utilized to show the effectiveness of the established theoretical method.

Keywords: Nonlinear multi-agent systems, Extended dissipative consensus, Event-triggered consensus.

1. Introduction

During the past decade, multi-agent systems have attracted extensive attention in many fields of theoretical researches and practical engineering. In general, multi-agent systems are grouped by individual agents connected with local information exchanges [1–6]. Especially, there has been a great deal of effort in the so-called consensus problem, which means that certain agreement can be reached among the agents. It is worth

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