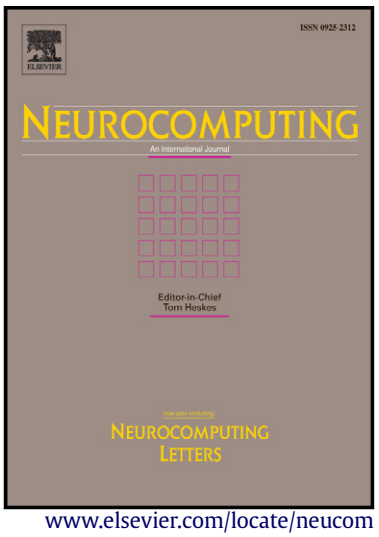

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PII: S0925-2312(15)01180-7
DOI: http://dx.doi.org/10.1016/j.neucom.2015.08.027
Reference: NEUCOM15956

To appear in: *Neurocomputing*

Received date: 23 June 2015
Revised date: 6 August 2015
Accepted date: 9 August 2015

Cite this article as: Xiwei Liu, Ying Liu, Lingjun Zhou, Quasi-synchronization of nonlinear coupled chaotic systems via eq5ically intermittent pinning control, *Neurocomputing*, http://dx.doi.org/10.1016/j.neucom.2015.08.027

Quasi-synchronization of nonlinear coupled chaotic systems via aperiodically intermittent pinning control

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Abstract

In this paper, the quasi-synchronization of nonlinear coupled networks in the presence of parameter mismatches with time delay via aperiodically intermittent pinning control is investigated. There are two main differences of this paper with previous works: one is that the intermittent pinning control is aperiodic while that in previous works is periodic; the other is that the model is generalized from master-slave coupled systems of only two nodes to general nonlinear coupled networks. By using the aperiodically intermittent pinning control technique, a simple controller to pin the coupled networks to achieve quasi-synchronization is designed. Some sufficient criteria are obtained to guarantee global quasi-synchronization. Moreover, an adaptive algorithm for the control strength is also proposed to realize the quasi-synchronization. Finally, numerical simulations are given to show the validity of our theoretical results.

Key words: Nonlinear coupling, aperiodically intermittent control, parameter mismatches, pinning control, quasi-synchronization

1. Introduction

Over the past decades, the synchronization and its control problem, see [1]-[11] and references therein, has drawn more and more attention due to its theoretical importance and practical applications, such as secure communication, image processing and some

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