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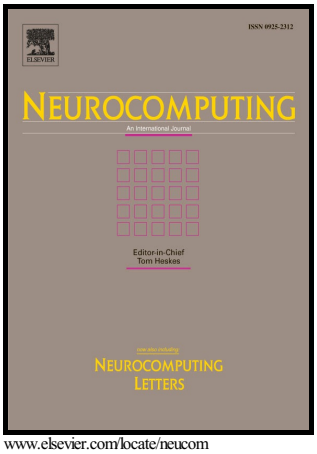

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PII: S0925-2312(17)30005-X
DOI: http://dx.doi.org/10.1016/j.neucom.2016.12.061
Reference: NEUCOM17894

To appear in: *Neurocomputing*

Received date: 28 September 2016
Revised date: 7 December 2016
Accepted date: 28 December 2016

Cite this article as: Chuan Chen, Lixiang Li, Haipeng Peng, Yixian Yang anc Tao Li, Finite-time synchronization of memristor-based neural networks witl mixed delays, *Neurocomputing,* http://dx.doi.org/10.1016/j.neucom.2016.12.061

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Finite-time synchronization of memristor-based neural networks with mixed delays

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Abstract

This paper deals with the finite time synchronization problem of memristor-based neural networks (MNNs) with mixed delays. By utilizing feedback controllers and constructing suitable Lyapunov functionals, several new sufficient conditions guaranteeing the finite time synchronization of MNNs with mixed delays are obtained based on different finite time synchronization analysis techniques. The obtained sufficient conditions are simple and easy to verify. Numerical simulations are given to illustrate the effectiveness of the theoretical results.

Keywords: Memristor, Neural networks, Finite time synchronization, Mixed delays

1. Introduction

In 1971, the concept of memristor was firstly proposed by Chua [1] as the fourth basic circuit element besides inductor, resistor and capacitor. In 2008, a prototype of memristor was successfully manufactured by researchers of the Hewlett-Packard Laboratory [2]. Memristor has variable resistance and manifests the memory characteristic. Because of these attractive properties, it is believed that memristor has many promising applications. For instance, by means of memristor devices, the starting speed of a computer can be improved

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