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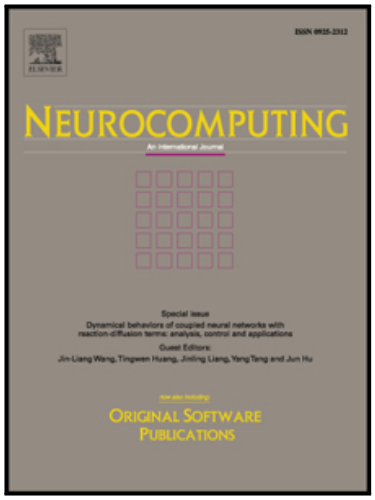

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Robust finite-time state estimation for uncertain discrete-time Markovian jump neural networks with two delay components*

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Abstract

This paper considers the problem of robust finite-time state estimation for a class of discrete-time neural networks with two delay components and Markovian jump parameters. A new discrete-time Lyapunov-Krasovskii functional containing two independent delay components is constructed. Some well-known inequalities are introduced to reduce the conservatism. To ensure the existence of the state estimator, sufficient conditions are derived in the form of linear matrix inequalities, which can be checked easily by the MATLAB LMI toolbox. Finally, an example is given to show the effectiveness of the designed estimator.

Key Words: Discrete-time Markovian jump neural network; finite-time state estimation; two delay; robust stability; Lyapunov-Krasovskii functional.

1 Introduction

A neural network is a complex network system, which is composed of a large number of simple processing units (or neurons). An artificial neural network model is a nonlinear

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