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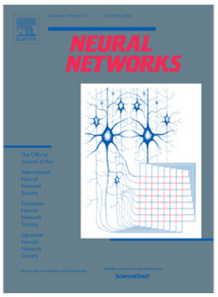

Leaderless synchronization of coupled neural networks with the event-triggered mechanism

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Leaderless synchronization of coupled neural networks with the event-triggered mechanism ☆

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Abstract

This paper is concerned with leaderless synchronization of coupled delayed neural networks. A distributed event-triggered control strategy under the periodic sampling scheme is introduced to reduce control updates. By introducing a weighted average state as a virtual leader, the leaderless synchronization problem can be transformed to the stability problem of the error system, which is defined as the distance between each node and the virtual leader. A leaderless synchronization criterion under the periodic event-triggered scheme in strongly connected networks is first derived based on Finsler's lemma. The results are then extended to the network containing a directed spanning tree. A corollary with the lower dimension in the form of LMIs is further presented. Two examples are provided to validate the effectiveness of the theoretical results.

Keywords: Leaderless synchronization; Neural networks; Event-triggered strategy; Periodic sampling; Finsler's Lemma

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