Lu, Binglong; Jiang, Haijun; Hu, Cheng; Abdurahman, Abdujelil
Synchronization of hybrid coupled reaction-diffusion neural networks with time delays via generalized intermittent control with spacial sampled-data. (English) Zbl 1441.93247
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Summary: The exponential synchronization of hybrid coupled reaction-diffusion neural networks with time delays is discussed in this article. At first, a generalized intermittent control with spacial sampled-data is introduced, which is intermittent in time and data sampling in space. This type of control strategy not only can unify the traditional periodic intermittent control and the aperiodic case, but also can lower the update rate of the controller in both temporal and spatial domains. Next, based on the designed control protocol and the Lyapunov-Krasovskii functional approach, some novel and readily verified criteria are established to guarantee the exponential synchronization of the considered networks. These criteria depend on the diffusion coefficients, coupled strengths, time delays as well as control parameters. Finally, the effectiveness of the proposed control strategy is shown by a numerical example.

MSC:
93D23 Exponential stability
93C57 Sampled-data control/observation systems
93C43 Delay control/observation systems
93B70 Networked control

Keywords:
reaction-diffusion neural network; hybrid coupling; synchronization; generalized intermittent control; spacial sampled-data

Full Text: DOI

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