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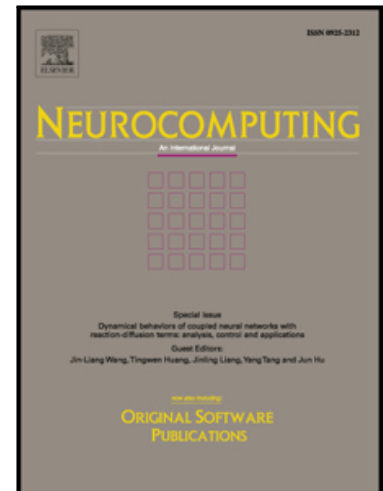
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Dissipativity and passivity analysis for memristor-based neural networks with leakage and two additive time-varying delays[☆]

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Abstract

In this paper, the problems of dissipativity and passivity analysis for memristor-based neural networks (MNNs) with both time-varying leakage delay and two additive time-varying delays are studied. By introducing an improved Lyapunov-Krasovskii functional (LKF) with triple integral terms, and combining the reciprocally convex combination technique, Wirtinger-based integral inequality with free-weighting matrices technique, some less conservative delay-dependent dissipativity and passivity criteria are obtained. The proposed criteria that depend on the upper bounds of the leakage and additive time-varying delays are given in terms of linear matrix inequalities (LMI), which can be solved by MATLAB LMI Control Toolbox. Meanwhile, the criteria for the system with a single time-varying delay are also provided. Finally, some examples are given to illustrate the effectiveness and superiority of the obtained results.

Keywords: memristor-based neural networks, leakage delays, additive time-varying delays, dissipativity, passivity

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