Faydasicok, Ozlem

An improved Lyapunov functional with application to stability of Cohen-Grossberg neural networks of neutral-type with multiple delays. (English) Zbl 1478.93522
Neural Netw. 132, 532-539 (2020).

Summary: The essential objective of this research article is to investigate stability issue of neutral-type Cohen-Grossberg neural networks involving multiple time delays in states of neurons and multiple neutral delays in time derivatives of states of neurons in the network. By exploiting a modified and improved version of a previously introduced Lyapunov functional, a new sufficient stability criterion is obtained for global asymptotic stability of Cohen-Grossberg neural networks of neutral-type possessing multiple delays. The proposed new stability condition does not involve the time and neutral delay parameters. The obtained stability criterion is totally dependent on the system elements of Cohen-Grossberg neural network model. Moreover, the validity of this novel global asymptotic stability condition may be tested by only checking simple appropriate algebraic equations established within the parameters of the considered neutral-type neural network. In addition, an instructive numerical example is presented to indicate the advantages of our proposed stability result over the existing literature results obtained for stability of various classes of neutral-type neural networks having multiple delays.

MSC:
93D20 Asymptotic stability in control theory
93B70 Networked control
93C43 Delay control/observation systems

Keywords:
delayed neural networks; neutral systems; global stability analysis; Lyapunov functionals

Full Text: DOI

References:


Zhu, Q.; Cao, J., Robust exponential stability of Markovian jump impulsive stochastic Cohen-Grossberg neural networks with


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.