

# Existence and global convergence of periodic solutions in recurrent neural network models with a general piecewise alternately advanced and retarded argument

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This paper is concerned with existence, uniqueness and global exponential stability of a periodic solution for recurrent neural network described by a system of differential equations with piecewise constant argument of generalized type (in short DEPCAG). The model involves both advanced and delayed arguments. Employing Banach fixed point theorem combined with Green's function and DEPCAG integral inequality of Gronwall type, we obtain some novel sufficient conditions ensuring the existence as well as the global convergence of the periodic solution. Our results are new, extend and improve earlier publications. Several numerical examples and simulations are also given to show the feasibility of our results. © 2013 Springer Science+Business Media.