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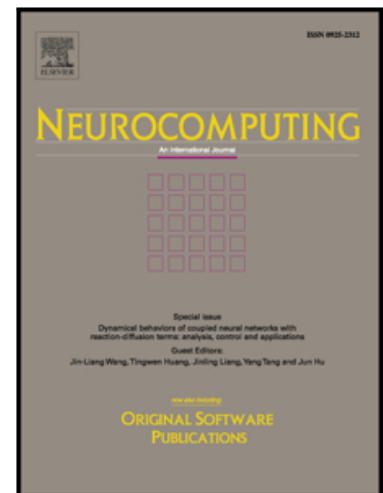
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# A New Finite-Time Varying-Parameter Convergent-Differential Neural-Network for Solving Nonlinear and Nonconvex Optimization Problems

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## Abstract

To solve nonlinear and nonconvex optimization problems, a novel finite-time varying-parameter convergent-differential neural network (termed as FT-VP-CDNN) is proposed and analyzed. Compared with finite-time fixed-parameter convergent-differential neural networks (FT-FP-CDNNs), the proposed FT-VP-CDNN has super exponential convergence, finite-time convergence and strong robustness. Finite-time convergence property of the FT-VP-CDNN is proved and various computer simulations are presented. Numerical simulations verify the superiority of the FT-VP-CDNN when solving nonlinear and nonconvex optimization problem.

*Keywords:* Nonconvex optimization, neural networks, nonlinear constraints,

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