

# Optimization of Neural Network by Multiple Particle Collision Algorithm

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***Abstract.** The optimization of neural network topology, weights and activation functions for the artificial neuron, considering a specific problem and the data, is not an easy task. A technique for automatic configuration of parameters topology for feedforward artificial neural networks (ANN) is presented. The determination of optimal parameters is formulated as an optimization problem, and it is solved with the use of meta-heuristic Multiple Particle Collision Algorithm (MPCA). The self-configuring networks are applied to climate prediction for the precipitation field on mesoscale.*

**Keyword:** *Neural network, climate prediction, multiple particle collision algorithm.*

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