Abstract

This paper addresses a classification task of pattern recognition by combining effectiveness of evolutionary and gradient descent techniques. We are proposing a hybrid supervised learning approach using real-coded GA and back-propagation to optimize the connection weights of multilayer perceptron. The following learning algorithm overcomes the problems and drawbacks of individual technique by introducing global and local adaptation strategies. The behavior of the proposed algorithm is observed by the experimental results on a couple of popular benchmark datasets. The results of our algorithm are compared with training algorithms based on conventional back-propagation and real-coded genetic algorithm. Finally we realize that proposed hybrid learning algorithm outperforms back-propagation and real-coded genetic algorithm based training the multilayer perceptron.
References

- Schaffer J. D., D. Whitley, and L. J. Eshelman, "Combinations of Genetic
Hybrid Supervised Learning in MLP using Real-coded GA and Back-propagation


Index Terms

Computer Science

Artificial Intelligence

Keywords

Genetic Algorithms
Multi-layer perceptron
Gradient descent
Generalization