Abstract

This paper proposes an improved version of particle swarm optimization (PSO) algorithm for the training of a neural network (NN). An architecture for the NN trained by PSO (standard PSO, improved PSO) is also introduced. This architecture has a data preprocessing mechanism which consists of a normalization module and a data-shuffling module. Experimental results showed that the NN trained by improved PSO (IPSO) achieved better performance than both the NN trained by standard PSO and the NN trained by back-propagation (BP) algorithm. The effectiveness concerning the recognition rate and the minimum learning error of the data preprocessing modules (normalization module, data-shuffling module) was also demonstrated through the experiments.

References

2. R. H. Nielsen, Theory of the backpropagation neural network, In processing of the


14. J. Han, M. Kamber, J. Pei, Data mining: concepts and techniques, 3rd edn, Morgan Kaufmann, 2011


**Index Terms**

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Keywords

Normalization, Data shuffling, Neural network, Particle swarm optimization, C language