Abstract

The artificial neural network (ANN) is a mathematical model capable of representing any non-linear relationship between input and output data. ANN is an abstract representation of the biological nervous system which has the ability to solve many complex problems. It has been successfully applied to a wide variety of classification and function approximation problems. The information processing capability of artificial neural networks (ANNs) is related to its architecture and weights. To have a high efficiency in ANN, selection of an appropriate architecture and learning algorithm is very important. In this study, the adaption of neural network connection weights using Bacterial Foraging Optimization Algorithm (BFO) is proposed as a mechanism to improve the performance of Artificial Neural Network in classification of Software Defect Dataset. The problem concerns the classification of software as defective or non-defective on the basis of software metrics data. The results show that BFO-ANNs have better accuracy than traditional ANNs. The experimental results showed that BFOA-ANN has an improvement of 2.55% in software defect prediction accuracy than the original feed forward artificial neural network and 2.80% in case of cascade forward neural network.
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**Index Terms**

Computer Science  
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**Keywords**

Artificial Neural Network  
Bacterial Foraging Optimization algorithm  
swarm intelligence