OPTIMIZING GENETIC ALGORITHMS TO TRAIN FULLY CONNECTED, FIXED FEEDFORWARD NEURAL NETWORKS

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ABSTRACT
Fully connected fixed feedforward neural networks possess pattern recognition properties that make them well suited for use in automatic target recognition systems. Their application is hindered, however, by the lack of a training algorithm, which reliably finds a nearly global optimal set of weights in a relatively short time. This paper examines the use of genetic algorithms as an efficient way to train a fully connected fixed feed-forward neural net. A set of experiments, using actual Laser Detection and Range data as training data, is described and the results presented. The effects of changing probabilities of mutation and crossover on neural net training, in the genetic algorithm are explored. The genetic algorithm is adjusted and the effects on training are analyzed from the standpoint of the number of generations required and the resulting correct and incorrect detections and classifications.