

APPLYING GENETIC ALGORITHMS TO RECURRENT NEURAL NETWORKS FOR LEARNING NETWORK PARAMETERS AND ARCHITECTURE

Abstract

by

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Recurrent neural networks such as the fully interconnected Hopfield network have the potential of being applied to many complex input output mapping problems, especially those requiring the outputs to change with time or where the outputs are state dependent. However, due to the difficulty of training such networks, these networks have not been as extensively utilized as the multilayer feedforward networks which can be trained using the back propagation algorithm. This thesis examines the applicability of an evolutionary approach referred to as a genetic algorithm to the problem of finding network parameters for a recurrent neural network. We also investigate the potential of the genetic algorithm to determine not only the network parameters, but also the number of neurons needed to solve the problem.

*Dedicated
to
my wife, Ruhina, and parents, Saleem and Noorjehan Syed*

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