The Anchored Node BackPropagation Network

Joseph A. Spizuoco
Department of Physics
Shippensburg University
Shippensburg, PA 17257

Abstract: Simple modifications to a standard Backpropagation (BP) network are described that result in a 90% decrease in training times for an eight input, one hidden layer, feedforward network. Compared to a similar BP network, the modified network is equally good at generalization and is not as sensitive to initial weight settings as measured by its likelihood of becoming trapped in a local minimum.

A NEURAL NETWORK IMPLEMENTATION OF ADAPTIVE BAM

Francisco J. LOPEZ-ALIGUE, Mª. Isabel ACEVEDO-SOTOCA and Miguel A. JARAMILLO-MORAN

Departamento de Electrónica. Universidad de Extremadura

Avda. Elvas, s/n. 06071 - BADAJOZ (SPAIN)

ABSTRACT

The general formulation of bidirectional associative memories presents certain difficulties when the associations of pairs of patterns do not suppose a local energy minimum. To avoid these problems, the present work describes an adaptive scheme which allows the correlation matrix to be modified so as to reach the energy minimum while at the same time identifying the input patterns. The strategy described here allows the adaptation of the matrix to be performed for each external input, so that it can henceforth be described as a supervised type of training scheme. A consequence is its synthesis by means of neural networks with both the BAM and the adaptive mechanism itself integrated in distinct layers, allowing either of them to be changed without altering the others. The proposed scheme is an extension of the well known neural synthesis for the associative memories through easy rules for building it.