

Abstract

The approximation of a complex function by an Artificial Neural Networks (ANN) of Radial basis Function (RBF) conducts to large size architectures (a considerable number of neurons in the hidden layer) which minimize the quality of the network generation. This paper develops and implements an algorithm based on the Newton's method for learning and searching for an optimal structure of a radial basis network. The algorithm reduces automatically the number of neurons in the hidden layer of the ANN and also reaches the minimal architecture without deteriorating the learning error. To validate the algorithm, simulation of filtering noise from a noisy sinusoidal signal has been performed using MATLAB/SIMULINK. Satisfying results have been obtained and application as a filter for fault detection in a Wind Energy Conversion System (WECS) is intended.