

A method for adapting single-output feed-forward neural networks with one hidden layer is proposed. The artificial neural net (ANN) is trained with historical time series input-output process data. Once trained, the ANN forecasts the process output in the future. It is assumed that the ANN is linear in the output weight vector and bias which are parameters of the net. This linearity property allows the use of the Kaczmarz's projection algorithm for updating the output weight vector and bias on-line to improve the prediction accuracy. The algorithm uses the error between the output measurement and the predicted output value to update the network's parameters recursively. The method's capability is demonstrated through computer simulation on a difference equation and cylinder air charge prediction in internal combustion engines.