AN ARCHITECTURAL FRAME WORK OF ANN BASED SHORT TERM ELECTRICITY PRICE FORECAST ENGINE FOR INDIAN ENERGY EXCHANGE USING SIMILAR DAY APPROACH

SMITHA ELSA PETER[1], I. JACOB RAGLEND[2] & SISHAJ P SIMON[3]

[1]Department of ECE, PRIST University, Thanjavur, Tamil Nadu, India

[2]Department of EEE, Noorul Islam University, Kumarakovil, Tamil Nadu, India

[3]Department of EEE, National Institute of Technology, Tamil Nadu, India

ABSTRACT

In a deregulated power market, generating companies (Gencos) evaluate bidding strategies to maximize their profit. A Genco has to make a decision based on limited information available, since it does not know the actual system Market Clearing Price (MCP) beforehand. Thus, an optimal bidding strategy is a challenging task for GenCos. Accurately forecasted MCP will aid as vital information in enhancing the chances of winning bids in today's competitive electricity markets. Based on the literatures, neural networks are used in most of the forecasting applications. This paper proposes a near optimal ANN architecture based electricity price forecast engine using the available historical data for forecasting MCP in Indian Energy exchange (IEX). This paper uses a similar-day approach for forecasting the MCP. The recent available historical data from 1st January 2014 to 16th March 2014 is used in this research work. This paper also investigates the performance related issues with the various ANN architecture models.

KEYWORDS: Error Variance, Feed Forward Back Propagation Neural Network, Market Clearing Price, Mean Absolute Percentage Error, Normalized Mean Square Error