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SHORT TERM LOAD FORECASTING USING HYBRID NEURO- WAVELET MODEL

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ABSTRACT

As the accuracy of the electricity load forecast in the is crucial in providing better cost effective risk management plans, this paper proposes a Short Term Electricity Load Forecast (STLF) model with a high forecasting accuracy. A cascaded forward BPN neuro-wavelet forecast model is adopted to perform the STLF. The model is composed of several neural networks whose data are processed using a wavelet technique. The data to be used in the model is electricity load historical data. The historical electricity load data is decomposed into several wavelet coefficient using the Discrete wavelet transform (DWT). The wavelet coefficients are used to train the neural networks (NNs) and later, used as the inputs to the NNs for electricity load prediction. The Levenberg-Marquardt (LM) algorithm is selected as the training algorithm for the NNs. To obtain the final forecast, the outputs from the NNs are recombined using the same wavelet technique.

Keywords - STLF, BPN and DWT.

1. INTRODUCTION

Short term load forecasting (STLF) has taken over a vital role in the operation and planning of power systems since the price depends critically on the accuracy of a load forecast. Forecasting of electricity load demand on half hourly or hourly basis, from one day to many days ahead is referred as Short Term Load Forecasting (STLF).

The aim of STLF is to predict the future electricity load based on the recognition of similar repeating trends of patterns from historical load data [1]. Normally, there are two different methods of forecasting models - the traditional models and the modern techniques.

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