SHORT-TERM UNIVARIATE FORECASTING OF ELECTRICITY LOAD DEMAND

B. K. P. K. Perera

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

In electrical generation companies, generation scheduling has to be done typically 24 hours ahead, based on the historical data of electricity load demand. With this aim, short-term univariate forecasting of electricity load demand has been studied since 1960's. However, there is a necessity of more research to study the interrelationships among daily patterns in forecasting the demand of next 24 hours. This research, with its focus on short-term load forecasting, aims to fill this gap by comparison of six different methods based on a set of real time data of a period of one year, provided by Ceylon Electricity Board gathered during 29-01-2006 to 28-01-2007 period taken at each half an hour.

The data of first 256 days (~70% of the dataset) were used to train the algorithm and last 109 days (~30% of the dataset) were used for testing. For this research, the existing method was compared with some linear statistical models and an artificial neural network. Also, the effect of historical daily load demand patterns on making the prediction of the next 24 hours was studied. The results show that the, forecasting of next twenty four hours can be done with the historical data taken up to the end of last twenty four hours. Another importance of this research is, with the historical data, unlike in most literature which forecasts only one value (either peak load demand of the day or only the load demand of next half an hour), the demand of entire day (48 data values for each half an hour) is forecasted at once.