A STUDY OF ACCURACY OF NEURAL NETWORKS, SUPPORT VECTOR MACHINES AND THE BAYESIAN REGRESSION IN LOAD DEMAND AND PRICE FORECASTING

By

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"A Study of Accuracy of Neural Networks, Support Vector Machines and the Bayesian Regression in Load Demand and Price Forecasting"

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"A Study of Accuracy of Neural Networks, Support Vector Machines and the Bayesian Regression in Load Demand and Price Forecasting"

A Thesis Presented to

Bahria University Islamabad

In partial fulfillment of the requirement for the degree of

MS (Electrical Engineering)

By

Talha Umair Sultan
Enrollment Number 01-244132-046

Spring, 2015

Final Approval

This thesis titled

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Dedicated to

My Mom, Dad, Sister

and

My Teachers

Acknowledgements

Thanks to

Almighty Allah,
For giving me the strength, motivation and ability to choose the right path.

My Parents,
To the strongest two people I know, if I were even ten percent a person that you guys are, I would be doing the world a favor.

Mr. Jehanzeb Ahmad,
We did it. *Bravo!*

~Talha

Table of Contents

Table of Figures:

ABSTRACT

For optimal power system operation, electrical generation must follow electrical load demand. The generation, transmission, and distribution utilities require some means to forecast the electrical load and its pricing so they can utilize their electrical infrastructure efficiently, securely, and economically. The short-term load and pricing forecast represents the electric load and cost forecast for a time interval of a few hours to a few days. This thesis will use three methods for forecasting: Neural networks, Support vector machines and the Bayesian regression. All these methods will use the same database obtained from the electrical company of Sydney, Australia. These regression models can be created and trained to receive historical load, price and future weather forecasts as inputs to produce a load and price forecast as its output. All the results from these methods will be recorded and compared to find which one gives us the best result with least MSE and NRMS.

Keywords: Electric load, Forecasting model, Regression, NN, SVM, Bayesian regression, MSE and NRMS.