SHORT TERM LOAD FORECASTING USING AI (ARTIFICIAL INTELLIGENCE TECHNIQUES)

BY

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A dissertation submitted to partial fulfillment of the requirements for the degree of

M.Sc. IN ELECTRICAL ENGINEERING

UNDER SUPERVISION OF

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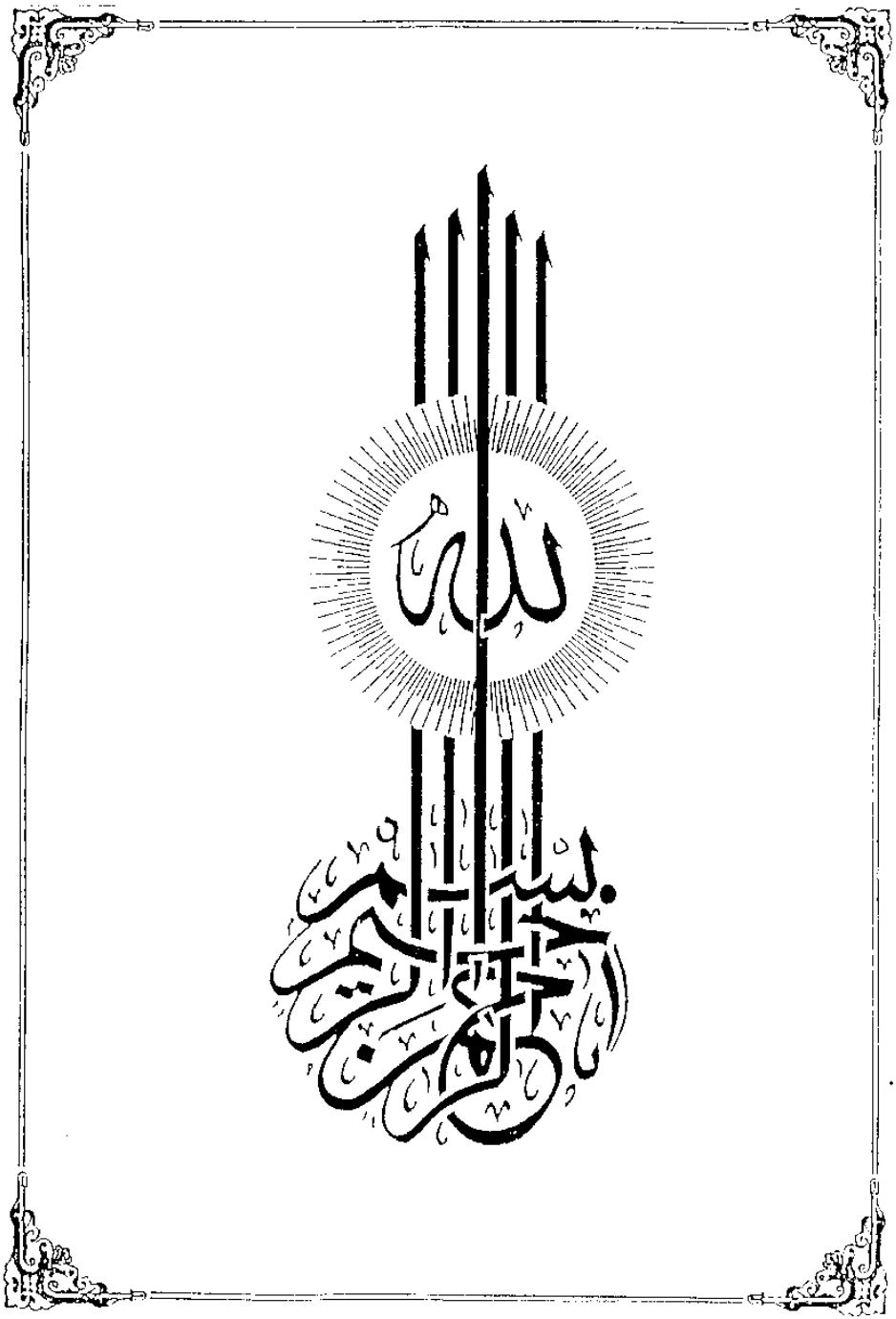

STATEMENT

This thesis is submitted to Ain Shams University for the degree of Master of science in Electrical Engineering

The work included in this thesis was carried out by the author in the Department of Electric power & Machines dept. , Faculty of Engineering, Ain Shams University from 1992 to 1996

No part of this thesis has been submitted for a degree or a qualification at any other University .

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ABSTRACT

Khaled Gamal El-Din Mohamed. Short term load forecasting using AI . Unpublished master of science dissertation, Ain Shams University, 1996.

Load forecasting models can be classified into short term, medium term , and long term model. Short term load forecasting is essential for the economic and secure operation of the electric utility system. Generation units: start-up or shut-down, unit commitment, on-line scheduling, and hydrothermal coordination are essential functions which are affected by the accuracy of the short term load forecasting model.

A novel Artificial Neural Network (ANN) model is designed for the purpose of forecasting electric hourly load. The forecast vector utilizes scaled historical data. The ANN based hourly load forecasting model is trained using the historical knowledge set of patterns, obtained for the Egyptian Unified Grid, utilizing the error back propagation based momentum method.

Testing the trained ANN model shows that it can forecast the predicted hourly load very efficiently and accurately, in comparison with a statistical based technique.

Key Words: ANN, Short Term Load Forecasting.

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