AN IMPLEMENTATION OF ARTIFICIAL NEURAL NETWORK (ANN) BASED ON LOAD DEMAND FORECASTING FOR UITM BUILDING

Project report is presented in partial fulfillment for the award of the

Bachelor of Electrical Engineering (Honours)

(UNIVERSITI TEKNOLOGI MARA)

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ACKNOWLEDGEMENT

ABSTRACT

This project report presents the application of Artificial Neural network (ANN), as one of the modern technologies based on artificial intelligence, for short term load forecasting in distribution system of UiTM building. ANN models are based on the activity in the human brain such as learning, generalization, recognition, and complex control [1]. First, a literature survey was conducted on the subject. Most of the reported models are based on the so-called Multi-Layer Perceptron (MLP) network. The ANN have the ability to respond to input stimuli and for learn to adapt to the environment by use a Multi-layer Perceptron (MLP) network as a network to identify the assumed relation between the future load and the earlier load [2]. Several models were developed and tested on the real load data of a UiTM electric utility by using a MLP network to identify the assumed relation between the future load and the earlier load including day, time, activity and temperature as inputs for the system.

Keywords
Artificial Neural Network (ANN), Short term load forecasting, Multi-layer Perceptron.

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INTRODUCTION

1.1 Background

A developing industrial country like Malaysia needs a reliable system that can be used to forecast electric utility as one of the central functions in power systems operations or managed the planning of electrical power generation so that the energy can be used effectively.

Especially, UiTM as a higher learning institution consume the energy daily and responsibility to provide the electricity to their areas continuously. Thus the accurate forecasting enables distribution systems and, thereby, power systems to prepare for forecasted load and to accomplish the main goal of electrical utility, i.e. to deliver the electrical energy to the consumer at lowest price and highest reliability.

UiTM had installed remote metering system in order to monitor the energy usage, which is used to measure and record the energy consumption data. By using the remote terminal unit, the data can be retrieved directly from a personal computer for analyzing and predicting the load demand to predict future values.

Consequently, load demand forecasting becomes an important contribution that goes beyond the electrical distribution in UiTM. Thus the implementations of Artificial intelligence techniques have been tried out in the task where the quality of the decision, based on careful analysis of growth patterns is acceptable to forecast the future demands.

Load demand forecasting is one of the central functions in power systems operations. The motivation for accurate forecasts lies in the nature of electricity as a commodity and trading article whereas electricity can not be stored, which means that for an electric