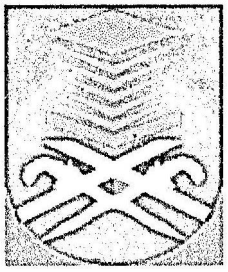
ARTIFICIAL INTELLIGENT SPEED CONTROLLER USING RBF METHOD FOR SEPARATELY EXCITED DC MOTOR

This project is presented in partial of fulfillment for the award of Bachelor of Electrical Engineering (Honours)

UNIVERSITI TEKNOLOGI MARA



AZRIN BIN KAMARUDDIN
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
OCTOBER 2003

ACKNOWLEDGEMENT

In the name of Allah s.w.t. The most Beneficent. The most Merciful. It is with deepest sense of gratitude of the almighty Allah who gave me strength and ability to complete this final year project as it is today.

I would like to thank to my project supervisor En.Razali B. Hj. Abd. Hadi. for his priceless guidance, advice, kindness and effort to guide me throughout the development of this work.

I would also like to express thanks to Prof. Madya Ir. Dr. Shah Rizam Bte Mohd. Shah Baki for her advice, and guidance, panels for their time to assess my technical report and all who have been involve directly or indirectly through this project.

Finally, I would like to express my great thankfulness to my parents for the support and their unending prayers that they have gave me in achieving my dream.

ABSTRACT

This paper presents a Radial Basis Function Neural Network (RBFNN) approach to design a separately excited DC motor speed controller, which behaves similar to PI controller. The RBFNN is set up by writing a program to create a 'black box', which will then applied to MATLAB-SIMULINK. A closed-loop system is used for testing. From the results obtained it shows that RBFNN is an alternative controller to replace the PI controller

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In the early days, electricity was commonly generated and supplied as direct current for used at dc motors. Nowadays, nearly all-public supplies of electricity are alternating current. However, direct current has many important applications.

For certain purposes the dc motor is the only acceptable machine. This arises when the drive requires automatic speed increase with light load and controlled braking as in electric traction and cranes.

Other applications require continuous control such that the speed may be held at any set value or made to bear a constant relation to other drives. For instance, in continuous rolling processes, steel mills, and hosiery.

The last decade has been seen the increasing interest in neural network application in control of various dynamic systems which include electric motor drives. Neural Networks has been trained to perform complex functions in various fields of application including pattern recognition, identification, and speech vision and control system [1]. Throughout history, Artificial neural network (ANN) can be trained to solve problems that are difficult for conventional computers or human beings. Due to that a 1KW DC motor controllers that uses neural network is done in this work. ANN is categories in two types of training. The two types are Supervised training and Unsupervised training. Unsupervised training is defined as a self organizing neural nets group without the use of training data to specify the typical member of each group looks like and no target vectors are specified while the Supervised training is defined as the training set that uses a sequence of training data,