DESIGN AND PERFORMANCE OF FUZZY LOGIC SPEED CONTROLLER FOR DC MOTOR

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

UNIVERSITI TEKNOLOGI MARA

KAMARUL AZWAN BIN MOHD ZAWAWI
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
OCTOBER 2003

Acknowledgement

I wish to acknowledge my debt to all those who have somehow contribute to my knowledge and efforts on this project.

First of all, I would like to show my gratitude to my respected supervisor who has proposed this project, En Razali Bin Hj Abd Hadi for his invaluable support, patient, guidance, assistance and especially his encouragement to this project. A token of appreciation is also to lecturer Associate Prof Ir Dr Shah Rizam bt Mohd Shah Baki for their kind and generous advice.

Finally, I am greatly indebted to all my course mates who have involve directly or indirectly for their aid and comments throughout development of this project. Moreover, great appreciation also goes up to my family for their wholeheartedly supports and patience.

Abstract

This thesis presents the research study and design of a Fuzzy Logic Controller (FLC) to be implemented in the experiment of DC Motor speed controller. Separately excited DC motor with fuzzy controller is simulated. The linear and optimization process of fuzzy logic controller (FLC) is supported by tuning parameter from Proportional Integrative Derivative (PID) controller.

Experiments are conducted in order to obtain the best performance design for the close-loop system. The result shows that for certain value of the scaling factor of FLC, minimum error can be obtained and the performance of the system provides a faster transient response. Further analysis on the functionality of the fuzzy controller is evaluated by comparing the result in Fuzzy Logic with classical method (PID).

This model used an implementation under MATLAB/SIMULINK. Furthermore, it is also very useful in designing a controller in order to make sure a specific control system is stable.

TABLE OF CONTENTS