

Thesis Title	DC Motor Speed Control by Fuzzy-Eitelberg's Technique
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Abstract

This master thesis project is geared for the design and implementation of a fuzzy logic controller. The controller is to govern a DC-servo motor for regulating and tracking purposes. The design concept is based on the method introduced by Eitelberg in 1987. This method employs leveling of the input signals issued to the control loop. The technique is proved useful for industrial application when the original controller is hard-wired or prohibited from adjustment. Moreover, the method is suitable for a control system of which its mathematical model is difficult to be derived or synthesized.

The implemented controller is of a microprocessor-based type. It employs a low-cost 8 bit microprocessor Z180 running at 10 MHz clock rate. The controller issues appropriate signals according to the developed fuzzy algorithms. The signals are externally fed to the original control loop. In the case of having a system transfer function, the control algorithm acts in the way of adjusting the zeros of closed-loop transfer function. If the system transfer function does not exist, the control algorithm adjusts the level of input signals. This technique can cope with the performance improvement to some extent as well demonstrated in the thesis.