

A COMPARATIVE STUDY OF CONVENTIONAL PID AND INTELLIGENT FUZZY-PID FOR DC MOTOR SPEED CONTROL

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ABSTRACT

The development of a Self Tuning Fuzzy proportional-integral-derivative (PID) controller was done to be compared with the conventional controller that is being used in a direct current (DC) motor. Simulation study is used to overcome the appearance of nonlinearities and uncertainties in the system with the proposed controller for the armature voltage controlled DC motors. Each parameter of the Fuzzy-PID controller is self tuned using 49 fuzzy rules in the fuzzy logic controller. The proportional, integral and derivative (K_p, K_i, K_d) gains of the PID controller is being tuned by the controller. Different types of membership functions are evaluated in the fuzzy control and the best performance will be used in Fuzzy-PID for comparative analysis with the conventional PID. The FIS editor from MATLAB defines the membership function and the rules. Load disturbances from a variety of speed response and the step response are simulated from different scenarios.

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