

PERFORMANCE AND ANALYSIS OF PID CONTROLLER BASED EVOLUTIONARY ALGORITHMS FOR SPEED CONTROL

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ABSTRACT

The control of the speed of a DC motor is an important issue and has been studied since the early decades in the last century. This paper presents comparison controllers such as PID controller and GA based PID for speed control of DC motor. Simulation results have established that the use of PID and GA-PID. A DC motor is important for a good dynamic, reliable behaviour of the DC motor, a great speed tracking with lowest overshoot, gives better performance and high strength than those obtained by use of the other controller. The DC motor is broadly used in many applications like steel mills, electric trains, cranes and much more. In this dissertation a separately excited dc motor using MATLAB modelling has been outlined whose velocity might be examined utilizing the Proportional, Integral, Derivative (KP, KI, KD) addition of the PID controller. In this paper is to analyse the execution of Optimization techniques viz. The Genetic Algorithm (GA) for improve PID controllers parameters for speed control of DC motor and list their points of interest over the traditional tuning strategies. The output speed error and its derivative as feedback damping signals. In this we have create three objective function with help of the MATLAB coding m-file, but third objective function is a novel creation for system which gives the better result than conventional objective function. aim of this paper the tuning method was more efficient in improving the step response characteristics such as, reducing the rise time, settling time and maximum overshoot in speed control of DC motor.

KEYWORDS: DC Motor, PID, Genetic Algorithm, Objective Function, ISE, MSE, and IAE