Speed Control of DC Motor Using Optimization Techniques Based PID Controller

Authors : Santosh Kumar Suman, Vinod Kumar Giri

Abstract : The goal of this paper is to outline a speed controller of a DC motor by choice of a PID parameters utilizing genetic algorithms (GAs), the DC motor is extensively utilized as a part of numerous applications such as steel plants, electric trains, cranes and a great deal more. DC motor could be represented by a nonlinear model when nonlinearities such as attractive dissemination are considered. To provide effective control, nonlinearities and uncertainties in the model must be taken into account in the control design. The DC motor is considered as third order system. Objective of this paper three type of tuning techniques for PID parameter. In this paper, an independently energized DC motor utilizing MATLAB displaying, has been outlined whose velocity might be examined utilizing the Proportional, Integral, Derivative (KP, KI , KD) addition of the PID controller. Since, established controllers PID are neglecting to control the drive when weight parameters be likewise changed. The principle point of this paper is to dissect the execution of optimization techniques viz. The Genetic Algorithm (GA) for improve PID controllers parameters for velocity control of DC motor and list their points of interest over the traditional tuning strategies. The outcomes got from GA calculations were contrasted and that got from traditional technique. It was found that the optimization techniques beat customary tuning practices of ordinary PID controllers.

Keywords : DC motor, PID controller, optimization techniques, genetic algorithm (GA), objective function, IAE

Conference Title : ICECSE 2016 : International Conference on Electrical, Computer and Systems Engineering

Conference Location : London, United Kingdom

Conference Dates : April 22-23, 2016