A Novel Fuzzy Self Tuning Technique of Single Neuron PID Controller for Brushless DC Motor

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Abstract

In this paper, a combination ANN/Fuzzy technique is used to design a Novel Fuzzy Single Neuron PID (NFSNPID) controller to achieve high performance brushless DC motor. The design steps include two parts. The first part uses the genetic algorithm (GA) to find the optimum parameters of Single Neuron PID (SNPID) controller, while the former deals with the design of fuzzy logic control to update the weights of SNPID control online. To demonstrate the designed controller effectiveness, a comparative study is made with between the NFSNPID, Conventional Fuzzy Single Neuron PID CFSNPID and SNPID. All controllers were used to drive, separately, the brushless DC motor against the sudden change of load and operating speed. The performed simulations show better results that motivate for further investigations.

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