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Fuzzy Logic Controller and IoT Based DC Motor Drives

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Abstract: In the advance engineering and science, the automatic control has played a vital role. The control of direct current (DC) motor is a common in industries thus the implementation of DC motor controller speed is important. The main purpose of proposed paper is to control motor speed, keep the rotation of the motor at the present speed and to drive a system at the demand speed. The project purpose is to control speed of DC Series Wound Motor using fuzzy logic controller. The DC Series Wound Motor is identical in industrial application and control systems as of the high torque density, high efficiency, and small size. In proposed paper, controlling speed of DC Series Wound Motor using Fuzzy Logic Controller (FLC). The main aim is to get the best performance compared to dc motor without controller in terms of settling time (Ts), rise time (Tr), peak time (Tp) and percentage peak overshoot (%MP) in Fuzzy Logic Controller

Keywords: DC motor, Demand speed, Fuzzy logic controller, High torque density

REFERENCES

- Khoei and K. Hadidi, "Microprocessor based closed-loop speed control system for DC motor using power MOSFET," in 3rd IEEE International Conference on Electronics, Circuits, and Systems (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1996), pp. 1247-1250.
- [2]. E. Sitompul and I. Bukhori, "A new approach in self-generation of fuzzy logic controller by means of genetic algorithm," in IEEE 6th International Conference on Information Technology and Electrical Engineering (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 2014), pp. 1-6.
- [3]. M. Muruganandam and M. Madheswaran, "Performance analysis of fuzzy logic controller-based DC-DC converter fed DC series motor," in Chinese IEEE Control and Decision Conference (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 2009), pp. 1635-1640.
- [4]. V. Donescu, G. Griva and D. O. Neacsu, "Design of fuzzy logic speed controller for brushless DC motor drives," in IEEE International Symposium on Industrial Electronics (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1996), pp. 404-408.
- [5]. 1L. A. Zadeh, Information and Control 8, 338-353 (1965).
- [6]. Reston Condit Microchip Technology Inc., Brushed DC motor fundamentals, Reston Condit, Idaho, 2004.
- [7]. T. C. Siong, B. Ismail, S. F. Siraj, M. F. Mohammed and M. F. N. Tajuddin, "Implementation of fuzzy logic controller for permanent magnet brushless DC motor drives," in IEEE International Conference on Power and Energy (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 2010), pp. 462-467.
- [8]. H. L. Tan, N. A. Rahim and W. P. Hew, "A dynamic input membership scheme for a fuzzy logic DC motor controller," in 12th IEEE International Conference on Fuzzy Systems (Institute of Electrical and Electronics Engineers, Piscataway, NJ, 2003) pp. 426-429.

