Title:	Single-Input Fuzzy Logic Controller for Torque and Speed Control of Energy Model Based Induction Motor
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Abstract:

The torque ripple of an induction motor is high due to the variable switching frequency where the torque is controlled by the conventional direct torque control strategy. The decoupling control of torque and flux controller can be designed based of the energy model of induction motor by keeping constant switching frequency. The fuzzy logic control system has shown better performance as compared with the proportional plus integral control system in order to avoid the overshoot and steady-state error problems with robust and faster performance. Generally, two input variables are used to design the conventional fuzzy logic control system where a large number of rules are required and output calculation procedure is time-consuming task. Single-input fuzzy logic control is required less number of rules without degrading the performance. Due to the reduced number of fuzzy rules, design the fuzzy logic controller and tuning parameters are easier. In this paper, a single-input fuzzy logic controller for torque and speed control of energy model based induction motor is proposed. The effectiveness of proposed control system is verified by the simulation work which has done by Matlab/Simulink. Simulation results show that the proposed controller is capable to reduce the steady-state error, overshoot problems and the performance of controller is robust under the variations of load torque and parameters. Moreover, it has found that the proposed controller exhibits equivalent performance with the conventional fuzzy logic controller.

Keywords: Direct torque control, fuzzy logic controller, single-input fuzzy logic controller, torque control, speed control, energy model, induction motor.