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Author(s) Name:	Mohammad Abdul Mannan, T. Murata and J. Tamura
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Abstract:

This paper work demonstrated an interactive fuzzy logic based torque and speed control for direct torque controlled induction motor (IM). The direct torque control (DTC) strategy has been designed to decouple the flux and torque control by using the energy model of induction motor. Traditional PI controller, which is used for industrial applications for its simplicity, does not meet the requirement (such as minimize the overshoot, steady-state error, robustness under the variation of load disturbance and parameters) for high performance of IM. In this paper two fuzzy logic controllers, which are designed based on energy model of IM, are developed to control the torque and speed of an IM. The drive is simulated successfully using MATLAB/SIMULINK to verify the performance of designed fuzzy-logic controllers. The performance of the drive has been examined under various working conditions. The proposed fuzzy logic controllers work satisfactorily making the drive more suitable for high performance applications.

Keywords: Direct-torque control, Fuzzy logic control, Speed control, Energy model, Induction motor.