



AIDTC Techniques for Induction Motors

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Abstract: Artificial intelligent systems are widely used in control applications. The proposed techniques controller of Induction Motor are used to reduce torque and flux ripples producing by the hysteresis comparators in the conventional DTC at very low speed. In addition the proposed speed controllers are presented in this paper to guarantee that the motor speed converges very well to the desired speed. The simulation results confirm the validity of the proposed techniques.

Keywords: ANN; DTC; fuzzy logic; PI; IM; speed controller.

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1 Introduction

Induction motors have been widely applied in industry because of the advantages of simple construction, ruggedness, reliability, low cost, and minimum maintenance. The recent challenge is to apply induction motors to precision servo machines such as robots and NC machines. The problem arises from the load variation during the motion of the motor [3]. The apparition of the field oriented control (FOC) made induction machine drives a major candidate in high performance motion control applications. However, the complexity of field oriented algorithms led to the development in recent years of many studies to find out different solutions for the induction motor control having the features of precise and quick torque response [4]. Direct torque control (DTC) of induction machines (IM) is a powerful control method for motor drives. Featuring a direct control of the stator flux and torque instead of the conventional current control technique, it

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