

PERFORMANCE COMPARISON OF ARTIFICIAL NEURAL NETWORK BASED CONTROLLERS FOR DIRECT TORQUE CONTROLLED INDUCTION MOTOR DRIVE

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Abstract

This paper presents the design of Artificial Neural Network (ANN) based controller for Direct Torque Controlled (DTC) Induction Motor. The control objectives like good transient and steady state performance, reduced torque and flux ripple and wide speed range operation are achieved using ANN. A new control strategy for Space Vector Modulation based DTC (SVM_DTC) using ANN to generate control vector is proposed. The paper compares application of ANN to Conventional DTC (C_DTC) and SVM_ DTC. Simulation studies show that the intelligent control technique is able to reduce the torque and flux ripples and to improve the performance of the drive especially at low speed. Proposed ANN_SVM_DTC is less complex, requires a single ANN controller for decoupled torque and flux control, and improves the performance.

Keywords: Direct Torque Control (DTC), space vector modulation (SVM), Artificial Neural Network (ANN).