DIRECT TORQUE CONTROL INDUCTION MOTOR DRIVE USING NEURAL NETWORK CONTROLLER

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Abstract

DC motors were used extensively in areas where variable-speed operation was required, however these motors need maintenance hence increase cost operations. These problems are solved by the application of AC motors, which have simple and rugged structure, high maintainability and economy. But, the main drawback that makes AC motors a retreat from the industry was the inherent coupling between torque and flux. However this disadvantage was amend by the exits of vector control. Hence, this paper presents a Direct Torque Control (DTC) motor drive by using the neural network for electric vehicle (EV). This paper aimed to make enable the application of induction motor drives for EV application and analyze the possible improvement by using the neural network based DTC. EV propulsion using induction motor drive employing DTC is becoming popular because of it's quick response and simple configuration. DTC control the machine with utilizing torque and flux of motor controlled. It allows the precise and quick control of the induction motor (IM) flux and torque without calling for complex control algorithms. This technique is extensively used in EV application. Simulation studies performed using MATLAB-simulink environment for the proposed method to support the study findings. The result shows the performance of the drive system is improved while reducing the torque and current ripple. The effectiveness and precision of this scheme is validated by simulation result, from which it is concluded that the proposed control scheme performed better than conventional DTC.