Analysis of permanent magnet synchronous motor using artificial neural network for electric vehicles

Mohamad Abd-Alraheim Badr

Dean

Abstract

This work presents a modern approach of speed control for permanent magnet synchronous motor (PMSM) using online artificial neural network (ANN). The overall system will be simulated under various operating conditions. The use of ANN as a controller makes the drive robust, with faster dynamic response higher accuracy and insensitive to load variation. Online training of the ANN is carried out and the results show fast convergence. After training the ANN the system is tested for a step change in load, the simulation results showing good dynamic response with fast recovery time.