

Real-Time Performance Evaluation Of A Genetic-Algorithm- Based Fuzzy

Logic Controller For IPM Motor Drives

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**IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC, IEEE TRANSACTIONS
ON INDUSTRY APPLICATIONS; pp: 246-252; Vol: 41**

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Summary

This paper presents a novel speed control scheme using a genetic-based fuzzy logic controller (GFLC) for an interior permanent-magnet synchronous motor (IPMSM) drive. The proposed GFLC is developed to have less computational burden, which makes it suitable for real-time implementation. The parameters for the GFLC are tuned by genetic algorithm (GA). The complete drive incorporating the GFLC is successfully implemented in real-time using a digital signal processor board DS 1102 for a laboratory 1-hp interior permanent magnet motor. The efficacy of the proposed GFLC-based IPMSM drive is verified by simulation as well as experimental results at various operating conditions. A performance comparison with a conventional proportional-integral controller is also provided to show the superiority of the proposed controller. The proposed GFLC is found to be robust for high-performance industrial drive applications.

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