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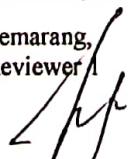
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ROBUST FUZZY CONTROL DESIGN USING GENETIC ALGORITHM OPTIMIZATION APPROACH: CASE STUDY OF SPARK IGNITION ENGINE TORQUE CONTROL

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Abstract

In the case of widely-uncertain non-linear system control design, it was very difficult to design a single controller to overcome control design specifications in all of its dynamical characteristics uncertainties. To resolve these problems, a new design method of robust fuzzy control proposed. The solution offered was by creating multiple soft-switching with Takagi-Sugeno fuzzy model for optimal solution control at all operating points that generate uncertainties. Optimal solution control at each operating point was calculated using genetic algorithm. A case study of engine torque control of spark ignition engine model was used to prove this new method of robust fuzzy control design. From the simulation results, it can be concluded that the controller operates very well for a wide uncertainty.

Keywords

[fuzzy logic](#); [Robust fuzzy control](#); [Takagi-Sugeno fuzzy model](#); [Genetic Algorithm](#); [Engine torque control](#); [Spark ignition engine](#)

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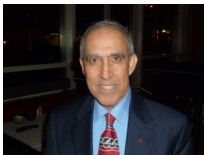
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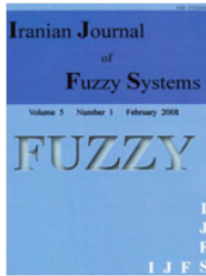
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Volume 14, Issue 3, June-July 2017, Article number 2, Pages 1-13

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