

## 자기부상 시스템을 위한 퍼지로지직 기반의 비선형 제어기 설계 Design of Fuzzy-Logic Based Nonlinear Controller for Magnetic Suspension Systems

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**Key Words** : Magnetic Suspension Systems, Fuzzy Estimator, Gain Scheduling

**Abstract** : Despite the existence of the high nonlinearity and the unstable dynamics, the magnetic suspension systems have been researched with merits such as the absence of contact reduces noise, component wear, vibration, and maintenance cost. In this paper, in order to construct a stabilizing nonlinear controller for the magnetic suspension systems we propose a fuzzy-based nonlinear gain scheduling method. The proposed method is composed of the fuzzy estimator and the gain scheduled controller. The fuzzy estimator predicts the uncertain mass in the closed-loop control system and the stabilizing gains of the gain scheduled controller are continuously changed according to the mass estimate. The performance comparison of the proposed method to the feedback linearization method is provided in the simulation.