



DC Motor Position Control Using Discrete-Time Fixed-Order H_∞ Controllers

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Abstract:

This paper describes the design and experimental implementation of a discrete-time fixed-order H_∞ controller for a DC motor position control. Based on grey box modeling, a model of the DC motor is identified. An extension of HIFOO toolbox to discrete-time controller design developed recently is used to synthesize the controller. The performance of the designed controller in comparison with various control strategies is demonstrated. The paper aims at demonstrating simple modeling and control synthesis techniques with the help of available software tools to design low-complexity controllers in terms of design and implementation. Consequently, cheap hardware can be utilized for several applications.

Keywords:

Discrete-Time H_∞ Control, DC Motor Position Control, DC Motor Speed Control, Fixed-Order Controllers, Microcontroller

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