

Inverse Model Based Adaptive Control Of Magnetic Levitation System

Shafiq, M. Akhtar, S.; Dept. of Syst. Eng., King Fahd Univ. of Pet. & Miner., Dhahran, Saudi Arabia;

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King Fahd University of Petroleum & Minerals

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Summary

This paper presents, an adaptive finite impulse response (FIR) filter based controller used for the tracking of a ferric ball under the influence of magnetic force. The adaptive filter is designed online as approximate inverse system. To stabilize the open-loop unstable and highly nonlinear magnetic levitation system, PID controller is designed using polynomial approach. To improve the stability, an adaptive FIR filter is added along side the PID controller while the use of the proposed controller has improved tracking. Since adaptive FIR filters are inherently stable so the controller remains stable. Experimental results are included to highlight the excellent position tracking performance.

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