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NEURO-FUZZY OBSERVERS OF CLAMPING FORCE FOR MAGNETICALLY OPERATED MOVERS OF MOBILE ROBOTS

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Abstract

The models of observers for clamping force identification on the basis of ANFIS type hybrid neuro-fuzzy computational system (NFCS) is offered for magnetically operated movers of mobile robots for moving on inclined or vertical ferromagnetic surfaces. The results of experimental investigations of breakaway effort measurements in different spatial positions of clamping magnet relative to the ferromagnetic surface are brought that provides effective

training NFCS, built into the clamping force automatic control system of the mobile robot. A comparative analysis of the developed observers with different types of membership functions is performed. Results of formed clamping force identification and an analysis of the adequacy of the observers' synthesized models are presented. References 14, figures 4, tables 3.

Key words: mobile robot; magnetically operated mover; electromagnetic field; clamping electromagnet; clamping force control system; neuro-fuzzy observer.

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