

Identification of Dynamic Friction Model for High-Precision Motion Control

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Abstract : This paper deals with experimental identification of mechanical systems with nonlinear friction characteristics. Dynamic LuGre friction model is adopted and a systematic approach to parameter identification of both linear and nonlinear subsystems is given. The identification procedure consists of three subsequent experiments which deal with the individual parts of plant dynamics. The proposed method is experimentally verified on an industrial-grade robotic manipulator. Model fidelity is compared with the results achieved with a static friction model.

Keywords : mechanical friction, LuGre model, friction identification, motion control

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