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System identification and control of an electro-hydraulic actuator system

Abstract :

Precise control of Electro-Hydraulic Actuator (EHA) system has been a challenging task due to nonlinearities, time varying characteristics and uncertainties of the system. A controller can be designed when given accurate model of the system. This paper presents the process to obtain an EHA system's model using system identification approach. System identification process has merit in obtaining system model as it requires only input and output data pairs from the system. Validation of the model is done by comparing the performance with the actual EHA system. A PID controller is later designed based on model obtained for accurate position tracking of the system. Simulation result and real time experiment show that the system which is applied with the proposed controller is able to perform position tracking with high accuracy.