

POSITION CONTROL OF A 3-DOF 3-RRR PLANAR PARALLEL MANIPULATOR USING MODEL PREDICTIVE CONTROL

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ABSTRACT: This paper presents the position control of a 3-DOF 3-RRR planar parallel manipulator by using the model predictive control. Not only the numerical simulations are demonstrated but also an experimental hardware-in-the-loop system is constructed. The experimental results are used to verify the simulation results. The entire system is designed as a semi-closed loop system. The manipulator is driven by three DC motors, and each motor has an encoder to measure the rotating angles of the motors. The controller receives the encoder signals as inputs to produce singles driving the motors. The results demonstrate that the position of the manipulator is fulfilled. Besides, the simulation and experimental results are compared, and they are good in agreement.

Keywords: position control, parallel manipulator, model predictive control.