USING LINEAR PROGRAMMING FOR THE OPTIMAL CONTROL OF A CART-PENDULUM SYSTEM

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ABSTRACT
This paper discusses the use of linear programming for the optimal control of a cart pendulum system. The objective function and the constraints are designed to minimize the control effort and the time duration of the operation. Simulations and experimental tests were performed. Restrictions of null angle and angular velocity at the extremes were incorporated in the design specification as well as other physical constraints. In order to compensate for the modeling errors and disturbances, the optimal trajectory was kept within a prescribed precision by means of a closed loop system. The obtained results illustrate that the technique is simple, powerful and always conclusive.

Keywords: Linear Programming, Optimal Control, Anti-oscillatory Control.

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