



PRACTICAL SWAY MOTION CONTROL FOR DOUBLE PENDULUM-TYPE OVERHEAD CRANE SYSTEM

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Abstract- The sway motion of crane can be successfully suppressed by properly shaping the reference command. Input shaping is a one type of feed-forward shaping method that is based on linear superposition. In this paper, we present the impact of double pendulum type overhead crane (DPTOC) system on the effectiveness of input shaping. An unshaped bang-bang input force is used to determine the characteristic parameters of the system for design and evaluation of the input shaping control techniques. The input shapers with the derivative effects are designed based on the properties of the system. The response DPTOC system to shaped input is experimentally verified in time and frequency domain. The performance of the input shaper is examined in terms of sway angle reduction and time response specification. Experimental results demonstrate the effectiveness of the proposed approach in reducing the sway motion of crane system.

Index terms: Input shaping, double pendulum, and sway motion.