Abstract

In this paper, a sliding mode control system with a predictive proportional-integral-derivative (PPID-SMC) sliding surface is proposed. A robust sliding mode controller is suggested to track the desired trajectory despite uncertainty, set point variations, and external disturbances. The proposed sliding mode controller is chosen to ensure the stability of overall dynamics during the reaching phase and sliding phase. The chattering problem is overcome using a hyperbolic tangent function for the sliding surface. Simulation example is given to illustrate the use of the proposed structure for better performance in terms of time domain specifications over some existing design methods.

References


J. V. Hung, W. Gco and J. C. Hung, "Variable structure control: A survey."

**Index Terms**

Computer Science  
Control Systems

**Keywords**

Sliding Mode Control  
Sliding surface  
Predictive PID  
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