Abstract

This paper presents a decoupling algorithm of sliding mode control on inverted pendulum. The decoupled method provides a simple way to achieve asymptotic stability for an nth-order nonlinear system. The system dynamics of SMC and inverted pendulum systems are encapsulated in the algorithm form and analysed by MATLAB Simulations. The convergence of the proposed sliding mode control is verified by Lyapunov function to prove the stability of system. Numerical simulations of designed SMC control strategy for inverted pendulum demonstrate faster convergence, reduced disturbance in control input and overall robust performance.

References


**Index Terms**

Computer Science  
Algorithms

**Keywords**

Sliding Mode Control (SMC), Inverted Pendulum, Decoupling Algorithm.