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 a nth-order nonlinear systems. 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.