

Nonlinear Adaptive Observer Based Sliding Mode Control For

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Nonlinear Adaptive Observer Based Sliding

The sliding mode control has been an effective tool for stabilization and stable control of nonlinear systems with disturbances and uncertainties [1,37]. The sliding mode controllers can reduce the order of original systems, and can achieve the finite-time convergence of the closed-loop control system [30,35,41,54].

Nonlinear disturbance observer based adaptive super ...

Secondly, the observer-based adaptive sliding mode controller is designed to adapt the unknown upper bounds of matched nonlinearity and disturbance and guarantee the stochastic stability of the closed-loop system. Finally, a numerical example is provided to show the effectiveness of the proposed scheme.

Observer-based adaptive sliding mode control for nonlinear ...

Nonlinear Disturbance Observer-Based Adaptive Sliding Mode Control for a Generic Hypersonic Vehicle In this paper, a new adaptive sliding mode control method is presented for the longitudinal model of a generic hypersonic vehicle subject to uncertainties and external disturbance.

Nonlinear Disturbance Observer-Based Adaptive Sliding Mode ...

In the proposed controller framework, a new nonlinear disturbance observer (NDO) is employed to estimate the lumped disturbances that are introduced into the sliding surface and virtual control input at each step to compensate the effects of disturbances. It is proved that the closed-loop system is asymptotically stable here.

Nonlinear Disturbance Observer-Based Adaptive Sliding Mode ...

Abstract: This paper presents a methodological approach to design observer-based adaptive sliding mode control for a class of nonlinear uncertain state-delayed systems with immeasurable states. A novel switching surface is proposed and a state observer is employed to reconstruct the sliding mode control action.

s12555-009-0405-3 Observer-Based Adaptive Sliding Mode ...

Searching for just a few words should be enough to get started. If you need to make more complex queries, use the tips below to guide you. Boolean operators This OR that This AND

Observer based adaptive interval type-2 fuzzy sliding mode ...

In this paper, an observer-based second-order non-singular fast terminal sliding mode control for robotic manipulators is proposed, and an adaptive law is designed to estimate the exact model and boundary parameters of the robot manipulator. The tracking errors are proven to converge to zero in a finite time.

Observer-based adaptive second-order non-singular fast ...

In control systems, sliding mode control (SMC) is a nonlinear control method that alters the dynamics of a nonlinear system by application of a discontinuous control signal (or more rigorously, a set-valued control signal) that forces the system to "slide" along a cross-section of the system's normal behavior.

Sliding mode control - Wikipedia

control loop based on a SOSM and a dc-link voltage reg-ulation loop which consists of an extended state observer (ESO) plus SOSM. In this work, the load connected to the dc-link capacitor is considered as an external disturbance. An ESO is used to asymptotically reject this external dis-turbance. Therefore, its design is considered in the control

Extended State Observer Based Sliding Mode Control for ...

An adaptive extended disturbance observer is constructed to ... An adaptive supplementary control method based on sliding mode technique and adaptive dynamic programming ... By combination of sliding mode technique with non-linear parametrization adaptive estimation technique, a new

6680 IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, VOL. 64 ...

an extended multiple sliding surface for a system with matched and unmatched uncertainties. The fundamental methodology is to apply the multiple surfaces to approximate the unknown lumped, perturbations simultaneously influencing on a nonlinear single input-single output (SISO) system.

Perturbation Observer-Based Robust Control Using a ...

This paper presents a sliding mode observer (SMO) for robustly reconstructing faults affecting a class of nonlinear non-infinitely observable descriptor systems. Preliminary transformations are utilised to re-express the system such that the design freedom in its structure is easier to exploit. An infinitely observable system is formed by treating some states as unknown inputs.

A sliding mode observer for robust fault reconstruction in ...

This paper presents a lumped perturbation observer-based robust control method using an extended multiple sliding surface for a system with matched and unmatched uncertainties. The fundamental methodology is to apply the multiple surfaces to approximate the unknown lumped perturbations simultaneously influencing on a nonlinear single input–single output (SISO) system. Subsequently, a ...

Perturbation Observer-Based Robust Control Using a ...

In this paper, a robust adaptive output feedback control strategy based on a sliding mode super-twisting algorithm is designed for the trajectory tracking control of a wheeled mobile robot. First, a robust adaptive law is designed to eliminate the influence of parameter uncertainties. Second, a double-power sliding mode surface is designed to improve the response speed of the robot system.

Adaptive Super-Twisting Sliding Mode Control for Mobile ...

Abstract In this paper, a sliding mode control (SMC) scheme is proposed for a class of nonlinear systems based on disturbance observers. For a nonlinear system, the disturbance that cannot be directly measured is estimated using a nonlinear disturbance observer.

Sliding mode control for a class of uncertain nonlinear ...

This paper considers the problem of observer-based adaptive fuzzy sliding mode control for switched uncertain nonlinear systems with dead-zone input in strict-feedback form. The explored switched systems include unknown nonlinearities, dead-zone and immeasurable states.

Observer-Based Adaptive Fuzzy Sliding Mode Control for ...

Adaptive Proxy-based Robust Control Integrated with Nonlinear Disturbance Observer for Pneumatic Muscle Actuators May 2020 IEEE/ASME Transactions on Mechatronics PP(99):1-1

(PDF) Adaptive Proxy-based Robust Control Integrated with ...

When tracking the trajectory of the mechanical arm in a joint space, the system is affected by friction non-linearity, unknown dynamic parameters and external disturbances that makes it difficult to improve the control accuracy of the mechanical arm. To solve the above problems, this paper introduces LuGre friction model and designs a new joint space trajectory tracking controller based on the ...

Fuzzy neural network control for mechanical arm based on ...

Adaptive Unknown Input Estimation by Sliding Modes and Differential Neural Network Observer IEEE Trans Neural Netw Learn Syst . 2018 Aug;29(8):3499-3509. doi: 10.1109/TNNLS.2017.2730847.