

## Discrete Sliding Mode Control For Robust Tracking Of Time

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~~System Using Sliding-Mode Control \u0026amp; Disturbance Compensation Stabilization of a Ball on Sphere System Using Sliding Mode Control Discrete Sliding Mode Control For~~

Here the aim is to stabilize the states by using discrete-time sliding mode control.  $f_k$  is the disturbance which is upper bounded by 0.01. The value of  $c_T$  is chosen as  $0.1 \times 1$ . The value of  $\lambda$  is chosen as 0.1, and the value of  $\mu$  is taken as 0.2544 as per Remark 3. The value of ultimate band is found to be 0.4544. Simulation is done in MATLAB/Simulink in discrete setting with sampling time 1 ms.

Discrete Time Sliding Mode Control | IntechOpen

analyzed speci cally for discrete-time sliding mode control (DSMC). 4. Discrete-Time Sliding Mode Control (DSMC) via NCS with Delay In this work, the proposed DSMC law can be of the form  $( ) = eq + , < +1 , ( )$  where  $eq$   $R$  is the equivalent control vector, which establishes the system dynamics in sliding mode, and  $R$  is the control signal vector that takes the trajectory of states to the sliding surface.

Research Article Discrete-Time Sliding Mode Control for ...

IET Digital Library: Sliding mode control for uncertain discrete-time systems based on fractional order reaching law The design and validation of a new fractional order (FO) reaching law for uncertain discrete-time systems is studied. A sliding mode controller is subsequently constructed by adopting this law.

Sliding mode control for uncertain discrete-time systems ...

This work deals with sliding mode control of discrete-time systems where the outputs are defined or chosen to be of relative degrees more than one. The analysis brings forward important advancements in the direction of discrete-time sliding mode control, such as improved robustness and performance of the system.

Discrete-Time Sliding Mode Control with Outputs of ...

Discrete Sliding Mode Control for Hypersonic Cruise Missile A discrete variable structure control (DVSC) with sliding vector is presented to track the velocity and acceleration command for a hypersonic cruise missile. In the design an integrator is augmented to ensure the tracking with zero steady-state errors.

Discrete Sliding Mode Control for Hypersonic Cruise Missile

Analysis and design of a dimming control based on the Discrete Sliding Mode Control (DSMC) strategy for electronic ballasts (without resonant tank) is presented. To avoid the acoustic resonance phenomenon, the proposed scheme feeds the lamp with low frequency square waves, and then to stabilize the lamp current a dc-dc converter with a closed loop control stage is included.

Analysis and design of discrete-sliding mode control for a ...

In , a discrete-time sliding mode controller was proposed for higher order plus delay time processes. In this paper, the main contribution is to develop a discrete-time sliding mode control approach, which can globally stabilize all states, including those which are indirectly actuated through the nonlinear coupling, for a small quadrotor UAV.

Discrete-time sliding mode control for a quadrotor UAV ...

Buy Discrete-Time Sliding Mode Protocols for Discrete Multi-Agent System: 303 (Studies in Systems, Decision and Control) 1st ed. 2021 by Patel, Keyurkumar, Mehta, Axaykumar (ISBN: 9789811563102) from Amazon's Book Store. Everyday low prices and free delivery on eligible orders.

Discrete-Time Sliding Mode Protocols for Discrete Multi ...

In this paper, a sliding mode control (SMC) of uncertain discrete singular systems with external disturbances and time-varying delays is under consideration. By use of the free weighting matrices and the Lyapunov–Krasovskii functional, a delay-dependent sufficient condition is given in strict linear matrix inequality (LMI) format to guarantee the sliding mode dynamics to be admissible (regular, causal and stable).

Robust sliding mode control for uncertain discrete ...

Second, a novel adaptive sliding mode surface is designed based on the characteristic model. Furthermore, a discrete-time sliding mode control (DTSMC) law, which makes the tracking error converge into a predefined bound in finite time, is proposed by employing the parameters of characteristic model associated with the sliding mode surface to provide better performances, robustness, faster response, and higher control precision.

Characteristic model-based discrete-time sliding mode ...

Discrete Time Sliding Mode Control | IntechOpen The discrete sliding mode control has been successfully applied in the control of induction motor-based drives [8–10]. Motor torque and rotor flux amplitude are controlled with DSMC in, and. Torque, flux and current components are controlled in a cascade structure in.

Discrete Sliding Mode Control For Robust Tracking Of Time

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. The state-feedback control law is not a continuous function of time.

Sliding mode control - Wikipedia

There are a large number of sliding mode control methods for discrete-time systems (Chakrabarty & Bandyopadhyay, 2015; Zhang et al., 2008). The most commonly used discrete-time sliding mode control method is the reaching law method, which was proposed by Gao et.(Bartoszewicz & Latosiński, 2016). However, based on the reaching law, the state cannot stay in the sliding surface during the sliding phase.

Discrete-time sliding mode control for a class of ...

Modeling and Robust Discrete-Time Sliding-Mode Control Design for a Fluid Power Electrohydraulic Actuator (EHA) System Abstract: This paper studies the design of a robust discrete-time sliding-mode control (DT-SMC) for a high precision electrohydraulic actuator (EHA) system.

Modeling and Robust Discrete-Time Sliding-Mode Control ...

The discrete algorithms for sliding mode control of the motor speed and rotor flux are derived in detail and next tested in simulation research. The simulation tests include the discrete nature of the power converter supplying the IM and present excellent performance of the developed

Discrete Sliding Mode Speed Control of Induction Motor ...

Moreover, by means of combining model predictive control and CFDL digital integral terminal sliding mode control (CFDL-DITSMC), the CFDL digital integral terminal sliding mode predictive control (CFDL-DITSMPC) method is proposed, which can further improve the tracking accuracy and disturbance rejection performance in comparison with the CFDL model-free adaptive control, neural network quasi-sliding mode control and the CFDL-DITSMC scheme.

Model-free adaptive integral terminal sliding mode ...

The Sliding Mode Control (SMC) is well known by its robustness to parameter uncertainties or external disturbances. The repetitive control (RC) is able to track or reject periodic and multi-periodic signals. This paper presents a new control strategy as a combination of a Sliding Mode approach and Repetitive Control to reject periodic and multi-periodic disturbances in the case of nonlinear ...

New Discrete Sliding Mode Control for Nonlinear ...

In this article, a disturbance observer-based discrete sliding-mode control scheme is proposed for the speed control of the marine diesel engine. The system uncertainties and external disturbances are estimated by the designed disturbance observer based on the second-order sliding-mode control.

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