

Fuzzy Sliding Mode Control And Observation Of Complex Dynamic Systems And Applicationschinese Edition

Fuzzy Sliding Mode Control And

Fuzzy controllers work like modified sliding mode controllers (SMCs). Compared to ordinary SMCs, fuzzy controllers (FCs) have the advantage of higher robustness. The structure of a FC is derived...

(PDF) Sliding mode fuzzy control - ResearchGate

In this study, fuzzy sliding-mode control (FSMC) method, which is one of the active control algorithms, has been applied for seismic isolation of earthquake-excited structures. The chattering effect, the major disadvantage of conventional sliding-mode controller, has been removed by introducing FSMC without losing the robustness against parametric uncertainties, modeling inaccuracies and varying dynamic loads.

Fuzzy sliding-mode control of structures - ScienceDirect

Sliding Mode Control and Fuzzy Sliding Mode Control for DC-DC Converters. By Kamel Ben Saad, Abdelaziz Sahbani and Mohamed Benrejeb. Submitted: June 4th 2010 Reviewed: September 25th 2010 Published: April 11th 2011. DOI: 10.5772/15151

Sliding Mode Control and Fuzzy Sliding Mode Control for DC ...

Sliding mode control (SMC) is adopted to perform robotic manipulator trajectory tracking control. Then, a fuzzy logic system is used for adaptive adjustment of switching gain of the SMC and to reduce the buffeting problem.

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Adaptive Fuzzy Sliding Mode and Robust Tracking Control ...

Fuzzy sliding mode control as a robust and intelligent nonlinear control technique is proposed to control processes with severe nonlinearity and unknown models. This paper proposes a new adaptive tracking fuzzy sliding mode controller for nonlinear systems in the presence of fuzzy compensation.

Sliding Mode Control with Adaptive Fuzzy Compensation for ...

An adaptive fuzzy sliding mode control based on soft-switching law is defined to control the speed of an induction motor.

Adaptive fuzzy sliding mode control design for vehicle ...

Adaptive fuzzy sliding mode control of nonlinear system. Abstract: In this paper, the fuzzy approximator and sliding mode control (SMC) scheme are considered. We propose two methods of adaptive SMC schemes that the fuzzy logic systems (approximators) are used to approximate the unknown system functions in designing the SMC of nonlinear system. In the first method, a fuzzy logic system is utilized to approximate the unknown function f of the nonlinear system $\dot{x} = f(x, t) + b(x, t)u$ and ...

Adaptive fuzzy sliding mode control of nonlinear system ...

In this paper, an adaptive fuzzy sliding mode controller (AF- SMC) is proposed to deal with imprecise single-input-single- output (SISO) nonlinear systems.

ADAPTIVE FUZZY SLIDING MODE CONTROL OF UNCERTAIN NONLINEAR ...

And fuzzy sliding mode control, can exploit the strong points of both FLC and SMC effectively. Zadeh published a paper about the concept 'fuzzy set' in 1965. Fuzzy sets extend the membership

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grade of an element to a set from the original non-zero to any value that can be taken from the interval $[0,1]$.

Sliding-Mode-Control-Theory-Based Adaptive General Type-2 ...

Fuzzy sliding-mode controllers with applications Abstract: This paper concerns the design of robust control systems using sliding-mode control that incorporates a fuzzy tuning technique. The control law superposes equivalent control, switching control, and fuzzy control. An equivalent control law is first designed using pole placement.

Fuzzy sliding-mode controllers with applications - IEEE ...

There are other nonlinear controllers like one-cycle control, current mode controller, sliding mode controller which are employed for DC- DC converters. Amongst all those mentioned, fuzzy logic control and SMC are advantageous as they are simple and model free techniques.

Comparison of PI, Fuzzy and Sliding Mode Control ...

Journal of Fuzzy Set Valued Analysis This paper presents a novel Adaptive Fuzzy Sliding Mode Controller (AFSMC) for a model-scaled unmanned helicopter as real nonlinear plant. First, in order to efficient control law design, the nonlinear model of the helicopter is reformulated as an affine nonlinear system.

[PDF] Adaptive Fuzzy Sliding Mode Control for a Model ...

The first one is DOB for AMBS. Second, extended state observer is constructed via the estimated disturbance value, and the disturbance and uncertainty feedback is investigated. Finally, sliding mode control is built with a fuzzy rule for tuning the sliding surface boundary layer thickness. Nonlinear DOB.

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Effectiveness of fuzzy sliding mode control boundary layer ...

Subsequently, the application of three major classes of fuzzy logic control, including the conventional fuzzy control (Mamdani fuzzy control and Takagi-Sugeno-Kang fuzzy control), adaptive fuzzy control (self-tuning fuzzy control and direct/indirect adaptive fuzzy control), and hybrid fuzzy control (fuzzy PID control, fuzzy sliding mode control, and neuro-fuzzy control) are presented.

Survey on Fuzzy-Logic-Based Guidance and Control of Marine ...

Abstract Reactor power control is one of the most significant problems in a nuclear power plant. An innovative adaptive fuzzy sliding mode control (AFSMC) based on Takagi-Sugeno techniques for power tracking in nuclear reactor is presented. The developed fuzzy model has considered both neutron dynamics and thermal hydraulic dynamics.

Adaptive fuzzy sliding mode control based on Takagi-Sugeno ...

proposed fuzzy-sliding mode controller can effectively suppress the vibration of vehicles and improve their ride comfort and handling stability. Furthermore, it is shown that the "chattering" of the sliding mode controller is smoothed when it is integrated with a fuzzy logic control strategy. Although the cost function of the fuzzy-sliding mode control is a slightly higher than that of a classical LQR controller, the control effectiveness and robustness

Ling Fuzzy Logic MR - University Of Maryland

In this study, a disturbance observer-based integral fuzzy sliding-mode control methodology for a wind turbine system with a non-linear permanent magnet synchronous generator (PMSG) is proposed using the Takagi-Sugeno fuzzy model.

Disturbance observer-based integral fuzzy sliding-mode ...

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A sliding mode controller is designed for both altitude and attitude control of the quadcopter. The switching gain of the sliding mode controller is tuned based on the fuzzy control technique. Rule base of the fuzzy logic controller is designed based on vast simulation and stability of the designed algorithm is shown.

A Fuzzy Sliding Mode Control Design for Quadcopter ...

This paper developed an adaptive backstepping fuzzy sliding control (ABFSC) approach for a micro gyroscope. Based on backstepping design, an adaptive fuzzy sliding mode control was proposed to adjust the fuzzy parameters with self-learning ability and reject the system nonlinearities.

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