Stabilization Of Switched Nonlinear Systems With Unstable Modes Studies In Systems Decision And Control

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Input-to-State Stability of Nonlinear Switched Systems via ...
The problem of global stabilization for a class of switched nonlinear feedforward systems under arbitrary switchings is investigated in this paper. Based on the integrator forwarding technique and the common Lyapunov function method, we design bounded state feedback controllers of individual subsystems to guarantee asymptotic stability of the closed-loop system.

Stabilization of switched nonlinear systems using multiple ...
A state feedback stabilisation problem of switched non-linear systems with asymmetric output constraints (AOCs) is investigated in this study by combining a simple new common barrier Lyapunov function and then adding a power integrator technique. Smooth state feedback controllers are designed in a constructive and systematic way to make switched systems asymptotically stable and to prevent ...

Stabilization of a Class of Switched Positive Nonlinear ...
This paper considers the global stabilization problem via sampled-data control for a class of switched nonlinear systems meanwhile taking into account asynchronous switching.

Global Output Feedback Sampled-Data Stabilization of a ...
Abstract: This paper proposes an fuzzy adaptive output-feedback stabilization control method for nonstrict feedback uncertain switched nonlinear systems. The controlled system contains unmeasured states and unknown nonlinearities. First, a switched state observer is constructed in order to estimate the unmeasured states.

Stabilization of Switched Nonlinear Systems with Unstable ...
Index Terms— Input-to-state stabilization, switched nonlinear systems. II. INTRODUCTION Input-to-state stability is an important property of nonlinear systems besides asymptotical stability. So far, the study of such a property was mostly limited to a single nonlinear system (see [1], [2]–[5], and the

State feedback stabilisation of switched non-linear ...
On stabilization of switched nonlinear systems with unstable modes

Global Stabilization of a Class of Switched Nonlinear ...
most sure stability of randomly switched nonlinear systems when each sub-system is stable, and the switching is “slow” in a certain statistical sense. The slow switching condition takes the form of an upper bound on the probability mass function of the number of switches between the initial and current time instants.

Stabilization of Switched Linear Systems | Request PDF
Abstract: The global output feedback stabilization problem is investigated in this paper via sampled-data control for switched nonlinear systems in the p-normal form. First, a reduced-order state observer is designed. Then, an output feedback sampled-data controller is constructed with the relaxation of some restrictions of switched nonlinear systems.

Stabilization of Arbitrary Switched Nonlinear Fractional ...
both integer order and switched systems. According-ly, the contribution of this paper is to investigate the stabilizability and stabilization of such systems. The main contribution of this paper is to study the stabilizability and controller design of a class of non-linear continuous-time dynamical systems under ar-bitrary switching.

Stabilization Of Switched Nonlinear Systems
Stabilization of Switched Nonlinear Systems with Unstable Modes treats several different subclasses of SNS according to the characteristics of the individual system (time-varying and distributed parameters, for example), the state composition of individual modes and the degree and distribution of instability in its various modes.

(PDF) On stabilization of switched nonlinear systems with ...
This paper is a theoretical and practical study on the stabilization of fractional order Lipschitz nonlinear systems under arbitrary switching. The investigated system is a generalization of both switched and fractional order dynamical systems. Firstly, a switched frequency distributed model is introduced as an equivalent for the system.

Global stabilization for a class of switched nonlinear ...
(2009) Robust Stability and Stabilization of a Class of Nonlinear Switched Discrete-Time Systems with Time-Varying Delays. Journal of Optimization Theory and Applications 143 :2, 329-355. (2009) New stability and stabilization for switched neutral control systems.

A survey of results and perspectives on stabilization of ...
Shixian Luo, Feiqi Deng, Wu?Hua Chen, Unified dwell time–based stability and stabilization criteria for switched linear stochastic systems and their application to intermittent control, International Journal of Robust and Nonlinear Control, 10.1002/rnc.3997, 28, 6, (2014-2030), (2017).

Stability and Stabilization of Continuous?Time Switched ...
This paper surveys the recent theoretical results on the stabilization of switched nonlinear systems with unstable modes. Two cases are considered. (1) Some modes are stable, and others may be unstable. The stabilization can be achieved via the trade-off among stable modes and unstable ones. (2) All modes may be unstable.

Stabilization of Switched Nonlinear Systems by Adaptive ...
The problem of switching stabilization for a class of switched positive nonlinear systems (switched positive homogeneous cooperative system (SPHCS) in the continuous-time context and switched positive homogeneous order-preserving system (SPHOS) in the discrete-time context) is studied by using average dwell time (ADT) approach, where the positive subsystems are possibly all unstable.

Robust Stabilization for a Class of Switched Nonlinear Systems
This paper studies the input-to-state stability (ISS) of nonlinear switched systems. By using Lyapunov method involving indefinite derivative and average dwell-time (ADT) method, some sufficient conditions for ISS are obtained. In our approach, the time-derivative of the Lyapunov function is not necessarily negative definite and that allows wider applications than existing results in the ...

Finite?time stabilization of a class of switched ...
The stabilization of a class of single input switched nonlinear systems is investigated in the paper. The systems concerned are of switched upper-triangular structure. The stabilization of the switched system under some switching law is investigated. Sufficient conditions are given under which the globally asymptotically stabilization problem is solvable.

On Stability of Randomly Switched Nonlinear Systems
This paper addresses the stabilization problem for a class of switched nonlinear systems with Lipschitz nonlinearities using the multiple Lyapunov functions (MLFs) approach. A state feedback controller and a state dependent switching law are proposed to asymptotic stabilization the switched system via linear matrix inequalities (LMI). The developed control strategy ensures asymptotic stability ...

Input-to-State Stabilization of Switched Nonlinear Systems
Published: 20 August 2018 Stabilization of Switched Nonlinear Systems by Adaptive Observer-Based Dynamic Surface Control with Nonlinear Virtual and Output Feedback

Stabilization of Arbitrary Switched Nonlinear Fractional ...
For some switched nonlinear systems, stabilization can be achieved under arbitrary switching with state feedback control. Due to switching zero dynamics, ...