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Stability analysis of discontinuous dynamical systems ...

Lyapunov Functions for Continuous and Discontinuous ...

The lack of these properties in examples drawn from various disciplines motivates the need for more general notions than the classical one. First, we introduced notions of solution for discontinuous systems. Second, we reviewed the available tools from nonsmooth analysis to study the gradient information of candidate Lyapunov functions.

With this motivation, Discontinuous Systems develops nonsmooth stability analysis and discontinuous control synthesis based on novel modeling of discontinuous dynamic systems, operating under uncertain conditions. Although it is primarily a research monograph devoted to the theory of discontinuous dynamic systems, no background in discontinuous systems is required; such systems are introduced in the book at the appropriate conceptual level.

Nonsmooth Lyapunov Analysis in Finite and Infinite ...

Discontinuous Systems Lyapunov Analysis And Discontinuous systems : Lyapunov analysis and robust ... Asymptotic stability of piecewise affine systems with ...

ISS-Lyapunov Functions for Discontinuous Discrete-Time Systems Lars Grune and Christopher M. Kellett" Abstract Input-to-State Stability (ISS) and the ISS-Lyapunov function have proved to be useful tools for the analysis and design of nonlinear systems in a variety of contexts. Motivated by the fact that many Discontinuous systems : Lyapunov analysis and robust synthesis under uncertainty conditions. [U^V Orlov] -- A major problem in control engineering is robust feedback design that stabilizes a nominal plant while also attenuating the influence of parameter variations and external disturbances.<p>This ...

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studying a class of interconnected discontinuous dynamical systems and several specific examples.

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Discontinuous Systems: Lyapunov Analysis and Robust ...

Discontinuous Lyapunov Functions for Discontinuous Nonlinear Systems Stephan Trenn Jan C. Willems Center for Systems and Control University of Groningen, Netherlands Ongoing joint work with Raffaele Iervolino (University of Naples Federico II, Italy) and Francesco Vasca (University of Sannio, Benevento, Italy)

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Discontinuous Lyapunov Functions for Nonasymptotic ...

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[0901.3583] Discontinuous Dynamical Systems: A tutorial on ...

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Asymptotic stability of piecewise affine systems with ...

Nonsmooth Lyapunov Analysis in Finite and Infinite Dimensions provides helpful tools for the treatment of a broad class of dynamical systems that are governed, not only by ordinary differential equations but also by partial and functional differential equations. Existing Lyapunov constructions are extended to discontinuous systems—those with variable structure and impact—by the involvement of nonsmooth Lyapunov functions.

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Given a (differentiable) signal it is an important task for many applications to estimate on line its derivatives. Some well known algorithms to solve this problem include the (continuous) high-gain observers and (discontinuous) Levant's exact differentiators.

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