Nonlinear And Adaptive Control Design

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the new recursive design methodology--adaptive backstepping. Describes basic tools for nonadaptive backstepping design with state and output feedbacks.Nonlinear and Adaptive Control Design | Guide booksAdaptive control can be used in the case of complete unknown a. u = −cx−axˆ (13) aˆ˙ = x2 (14) If we let a˜ = a−aˆ, the closed-loop system is described by x˙ = −cx+ ˜ax (15) ˜a˙ = −x2 (16) This adaptive system is nonlinear, even though the original uncertain system is linear. This adaptive system is stable, but how to show it? 7Nonlinear and Adaptive Control - Search for peopleNonlinear and Adaptive Control Systems treats nonlinear control and adaptive control in a unified framework, presenting the major results at a moderate mathematical level, suitable for MSc students and engineers with undergraduate degrees. Topics covered include introduction to nonlinear systems; state space models; describing functions for common nonlinear components; stability theory; feedback linearization; adaptive control; nonlinear observer design; backstepping design; disturbance ...IET Digital Library: Nonlinear and Adaptive Control SystemsAbstract—An adaptive control design procedure for a class of nonlinear systems with both parametric uncertainty and unknown nonlinearities is presented. The unknown non- linearities lie within some 'bounding functions', which are assumed to be partially known. The key assumption is that the uncertain terms satisfy a 'triangularity condition'.A robust adaptive nonlinear control design - ScienceDirectNonlinear and Adaptive Control with Applications provides a detailed treatment of the design of robust adaptive controllers for nonlinear systems with uncertainties. The authors employ a new tool based on the ideas of system immersion and manifold invariance.Nonlinear and Adaptive Control with Applications ...Gao S, Dong H and Ning B (2017) Observer-based nonlinear feedback decentralized neural adaptive dynamic surface control for large-scale nonlinear systems, International Journal of Adaptive Control and Signal Processing, 31:11, (1686-1703), Online publication date: 1-Nov-2017.Nonlinear control design | Guide booksFurther, an observer-based adaptive fuzzy control scheme has been proposed. During the controller design procedure, fuzzy logic systems are used to model the unknown nonlinear functions, adaptive technique and backstepping are combined to construct the ideal virtual and the real laws. The proposed adaptive fuzzy output feedback controller guarantees that the tracking error converges to a small neighborhood of the origin and all the signals in the adaptive closed-loop system are bounded.Observer and Adaptive Fuzzy Control Design for Nonlinear ...This is especially difficult when one designs adaptive fuzzy (or neural network) controls for nonlinear systems, in which fuzzy controls have to consume many computational resources to tune a sufficiently large number of adaptive parameters, meanwhile nonlinear uncertainties block the high demanding control accuracy.Asymptotic adaptive control of nonlinear systems with ...Adaptive Nonlinea r ControlÑA T uto r ial Miroslav K rsti «c Universit y o f C alifo rnia, S an Diego ¥ Backstepping ¥ T uning F unctions Design ¥ Mo dula r D esign ¥ Output F eedback ¥ Extensions ¥ A S to chastic Example ¥ Applications and Additional Refer-ences main source: Nonlinea r a nd Adaptive Control Design

(Wiley , 1995)Adaptive Nonlinea r ControlÑA T uto r ial Miroslav K rsti «cUsing a pedagogical style along with detailed proofs and illustrative examples, this book opens a view to the largely unexplored area of nonlinear systems with uncertainties. The focus is on adaptive nonlinear control results introduced with the new recursive design methodology--adaptive backstepping.Nonlinear and Adaptive Control Design by Miroslav KrstićNonlinear and Adaptive Control Design is an absolute must for researchers and graduate students with an interest in nonlinear systems, adaptive control, stability and differential equations and for anyone who would like to find out about the new and exciting advances in these areas.Nonlinear and Adaptive Control Design: Krstic, Miroslav ...The focus is on adaptive nonlinear control results introduced with the new recursive design methodology--adaptive backstepping. Describes basic tools for nonadaptive backstepping design with state...Nonlinear and adaptive control design - Miroslav Krstić ...Hello, Sign in. Account & Lists Account Returns & Orders. TryNonlinear Control Design: 7: Krstic, Kanellakopoul ...Adaptive control is the control method used by a controller which must adapt to a controlled system with parameters which vary, or are initially uncertain. For example, as an aircraft flies, its mass will slowly decrease as a result of fuel consumption; a control law is needed that adapts itself to such changing conditions. Further, an observer-based adaptive fuzzy control scheme has been proposed. During the controller design procedure, fuzzy logic systems are used to model the unknown nonlinear functions, adaptive technique and backstepping are combined to construct the ideal virtual and the real laws. The proposed adaptive fuzzy output feedback controller guarantees that the tracking error converges to a small neighborhood of the origin and all the signals in the adaptive closed-loop system are bounded.

Nonlinear and Adaptive Control Design: Krstic, Miroslav ...

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Gao S, Dong H and Ning B (2017) Observer-based nonlinear feedback decentralized neural adaptive dynamic surface control for large-scale nonlinear systems, International Journal of Adaptive Control and Signal Processing, 31:11, (1686-1703), Online publication date: 1-Nov-2017.

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