

1. Record Nr.	UNINA9910502662903321
Autore	Jiang Zhong-Ping
Titolo	Trends in Nonlinear and Adaptive Control : A Tribute to Laurent Praly for His 65th Birthday
Pubbl/distr/stampa	Cham : , : Springer International Publishing AG, , 2021 ©2022
ISBN	3-030-74628-3
Descrizione fisica	1 online resource (290 pages)
Collana	Lecture Notes in Control and Information Sciences Ser. ; ; v.488
Altri autori (Persone)	Prieur Christophe Astolfi Alessandro
Soggetti	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Contents -- 1 Almost Feedback Linearization via Dynamic Extension: a Paradigm for Robust Semiglobal Stabilization of Nonlinear MIMO Systems -- 1.1 Foreword -- 1.2 Invertibility and Feedback Linearization -- 1.3 Normal Forms of Uniformly Invertible Nonlinear Systems -- 1.3.1 Normal Forms -- 1.3.2 Strongly Minimum-Phase Systems -- 1.4 Robust (Semiglobal) Stabilization via Almost Feedback Linearization -- 1.4.1 Standing Assumptions -- 1.4.2 The Nominal Linearizing Feedback -- 1.4.3 Robust Feedback Design -- 1.5 Application to the Problem of Output Regulation -- 1.6 An Illustrative Example -- References -- 2 Continuous-Time Implementation of Reset Control Systems -- 2.1 Introduction -- 2.2 Objective and Primary Assumption -- 2.3 Continuous-Time Implementation and Main Result -- 2.4 Examples and Simulations -- 2.4.1 Example 2.1 Revisited -- 2.4.2 A Clegg Integrator Controlling a Single Integrator System -- 2.4.3 A Bank of Clegg Integrators Controlling a Strictly Passive System -- 2.4.4 A Bank of Stable FOREs Controlling a Detectable Passive System -- 2.5 Conclusion -- References -- 3 On the Role of Well-Posedness in Homotopy Methods for the Stability Analysis of Nonlinear Feedback Systems -- 3.1 Introduction -- 3.2 Signal Spaces -- 3.2.1 Examples of Signal Spaces -- 3.2.2 Composite Signals -- 3.3 Systems, Controllability, and Causality -- 3.3.1 Controllability -- 3.3.2 Input/Output Systems, Causality, and Hemicontinuity -- 3.4 Stability

and Gain of IO Systems -- 3.4.1 Finite-Gain Stability -- 3.4.2 Relationships Between Gain, Small-Signal Gain, and Norm Gain -- 3.4.3 Stability Robustness in the Gap Topology -- 3.4.4 Stability via Homotopy -- 3.5 Stability of Interconnections -- 3.5.1 Well-Posed Interconnections -- 3.5.2 Regular Systems -- 3.5.3 Integral Quadratic Constraints -- 3.6 Summary -- 3.7 Appendix -- References.

4 Design of Heterogeneous Multi-agent System for Distributed Computation -- 4.1 Introduction -- 4.2 Strong Diffusive State Coupling -- 4.2.1 Finding the Number of Agents Participating in the Network -- 4.2.2 Distributed Least-Squares Solver -- 4.2.3 Distributed Median Solver -- 4.2.4 Distributed Optimization: Optimal Power Dispatch -- 4.3 Strong Diffusive Output Coupling -- 4.3.1 Synchronization of Heterogeneous Liénard Systems -- 4.3.2 Distributed State Estimation -- 4.4 General Description of Blended Dynamics -- 4.4.1 Distributed State Observer with Rank-Deficient Coupling -- 4.5 Robustness of Emergent Collective Behavior -- 4.6 More than Linear Coupling -- 4.6.1 Edge-Wise Funnel Coupling -- 4.6.2 Node-Wise Funnel Coupling -- References -- 5 Contributions to the Problem of High-Gain Observer Design for Hyperbolic Systems -- 5.1 Introduction -- 5.2 Problem Description and Solutions -- 5.2.1 Triangular Form for Observer Design -- 5.2.2 The High-Gain Observer Design Problem -- 5.3 Observer Design for Systems with a Single Velocity -- 5.3.1 Problem Statement and Requirements -- 5.3.2 Direct Solvability of the H-GODP -- 5.4 Observer Design for Systems with Distinct Velocities -- 5.4.1 System Requirements and Main Approach -- 5.4.2 Indirect Solvability of the H-GODP -- 5.5 Conclusion -- References -- 6 Robust Adaptive Disturbance Attenuation -- 6.1 Introduction -- 6.2 Problem Formulation and Objectives -- 6.2.1 Preliminaries and Notation -- 6.3 Known Stable Plants: SISO Systems -- 6.3.1 Discrete-Time Systems -- 6.3.2 Continuous-Time Systems -- 6.4 Known Stable Plants: MIMO Systems -- 6.4.1 Discrete-Time Systems -- 6.4.2 Continuous-Time Systems -- 6.5 Unknown Minimum-Phase Plants: SISO Systems -- 6.5.1 Non-adaptive Case: Known Plant and Known Disturbance Frequencies -- 6.5.2 Adaptive Case: Unknown Plant and Unknown Disturbance -- 6.6 Numerical Simulation. 6.6.1 SISO Discrete-Time Systems with Known Plant Model -- 6.6.2 SISO Continuous-Time Systems with Known Plant Model -- 6.6.3 MIMO Discrete-Time Systems with Known Plant Model -- 6.6.4 SISO Discrete-Time Systems with Unknown Plant Model -- 6.7 Conclusion -- References -- 7 Delay-Adaptive Observer-Based Control for Linear Systems with Unknown Input Delays -- 7.1 Introduction -- 7.1.1 Adaptive Control for Time-Delay Systems and PDEs -- 7.1.2 Results in This Chapter: Adaptive Control for Uncertain Linear Systems with Input Delays -- 7.2 Adaptive Control for Linear Systems with Discrete Input Delays -- 7.2.1 Global Stabilization under Uncertain Plant State -- 7.2.2 Global Stabilization Under Uncertain Delay -- 7.2.3 Local Stabilization Under Uncertain Delay and Actuator State -- 7.3 Observer-Based Adaptive Control for Linear Systems with Discrete Input Delays -- 7.4 Adaptive Control for Linear Systems with Distributed Input Delays -- 7.5 Beyond the Results Given Here -- References -- 8 Adaptive Control for Systems with Time-Varying Parameters-A Survey -- 8.1 Introduction -- 8.2 Motivating Examples and Preliminary Result -- 8.2.1 Parameter in the Feedback Path -- 8.2.2 Parameter in the Input Path -- 8.2.3 Preliminary Result: State-Feedback Design for Unmatched Parameters -- 8.3 Output-Feedback Design -- 8.3.1 System Reparameterization -- 8.3.2 Inverse Dynamics -- 8.3.3 Filter Design -- 8.3.4 Controller Design -- 8.4 Simulations -- 8.5 Conclusions -- References -- 9 Robust Reinforcement Learning for

Stochastic Linear Quadratic Control with Multiplicative Noise -- 9.1
Introduction -- 9.2 Problem Formulation and Preliminaries -- 9.3
Robust Policy Iteration -- 9.4 Multi-trajectory Optimistic Least-Squares
Policy Iteration -- 9.5 An Illustrative Example -- 9.6 Conclusions --
References -- Index.
