

1. Record Nr.	UNINA9910139298203321
Autore	Lewis Frank L.
Titolo	Optimal control / / Frank L. Lewis, Draguna L. Vrabie, Vassilis L. Syrmos
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Inc., , 2012 ©2012
ISBN	1-118-12272-0 1-283-42502-5 9786613425027 1-118-12264-X 1-118-12263-1 1-118-12270-4
Edizione	[3rd ed.]
Descrizione fisica	1 online resource (554 p.)
Disciplina	629.8/312 629.8312
Soggetti	Control theory Mathematical optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Optimal Control; Contents; Preface; 1 Static Optimization; 1.1 Optimization without Constraints; 1.2 Optimization with Equality Constraints; 1.3 Numerical Solution Methods Problems; Problems; 2 Optimal Control of Discrete-Time Systems; 2.1 Solution of the General Discrete-Time Optimization Problem; 2.2 Discrete-Time Linear Quadratic Regulator; 2.3 Digital Control of Continuous-Time Systems; 2.4 Steady-State Closed-Loop Control and Suboptimal Feedback; 2.5 Frequency-Domain Results; Problems; 3 Optimal Control of Continuous-Time Systems; 3.1 The Calculus of Variations 3.2 Solution of the General Continuous-Time Optimization Problem3.3 Continuous-Time Linear Quadratic Regulator; 3.4 Steady-State Closed-Loop Control and Suboptimal Feedback; 3.5 Frequency-Domain Results; Problems; 4 The Tracking Problem and Other LQR Extensions; 4.1 The Tracking Problem; 4.2 Regulator with Function of Final State Fixed; 4.3 Second-Order Variations in the Performance Index; 4.4 The

Discrete-Time Tracking Problem; 4.5 Discrete Regulator with Function of Final State Fixed; 4.6 Discrete Second-Order Variations in the Performance Index; Problems

5 Final-Time-Free And Constrained Input Control 5.1 Final-Time-Free Problems; 5.2 Constrained Input Problems; Problems; 6 Dynamic Programming; 6.1 Bellman's Principle of Optimality; 6.2 Discrete-Time Systems; 6.3 Continuous-Time Systems; Problems; 7 Optimal Control for Polynomial Systems; 7.1 Discrete Linear Quadratic Regulator; 7.2 Digital Control of Continuous-Time Systems; Problems; 8 Output Feedback and Structured Control; 8.1 Linear Quadratic Regulator with Output Feedback; 8.2 Tracking a Reference Input; 8.3 Tracking by Regulator Redesign; 8.4 Command-Generator Tracker

8.5 Explicit Model-Following Design 8.6 Output Feedback in Game Theory and Decentralized Control; Problems; 9 Robustness And Multivariable Frequency-Domain Techniques; 9.1 Introduction; 9.2 Multivariable Frequency-Domain Analysis; 9.3 Robust Output-Feedback Design; 9.4 Observers and the Kalman Filter; 9.5 LQG/Loop-Transfer Recovery; 9.6 H_∞ DESIGN; Problems; 10 Differential Games; 10.1 Optimal Control Derived Using Pontryagin's Minimum Principle and the Bellman Equation; 10.2 Two-player Zero-sum Games; 10.3 Application of Zero-sum Games to H_∞ Control; 10.4 Multiplayer Non-zero-sum Games

11 Reinforcement Learning and Optimal Adaptive Control 11.1 Reinforcement Learning; 11.2 Markov Decision Processes; 11.3 Policy Evaluation and Policy Improvement; 11.4 Temporal Difference Learning and Optimal Adaptive Control; 11.5 Optimal Adaptive Control for Discrete-time Systems; 11.6 Integral Reinforcement Learning for Optimal Adaptive Control of Continuous-time Systems; 11.7 Synchronous Optimal Adaptive Control for Continuous-time Systems; Appendix a Review of Matrix Algebra; A.1 Basic Definitions and Facts; A.2 Partitioned Matrices; A.3 Quadratic Forms and Definiteness

A.4 Matrix Calculus

Sommario/riassunto

A new edition of the classic text on optimal control theory. As a superb introductory text and an indispensable reference, this new edition of Optimal Control will serve the needs of both the professional engineer and the advanced student in mechanical, electrical, and aerospace engineering. Its coverage encompasses all the fundamental topics as well as the major changes that have occurred in recent years. An abundance of computer simulations using MATLAB and relevant Toolboxes is included to give the reader the actual experience of applying the theory to real-world situations. Major t