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Descrizione fisica	1 online resource (XXVI, 668 p.)
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Disciplina	515.64
Soggetti	Calculus of variations Calculus of Variations and Optimal Control; Optimization
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Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"With 193 Illustrations."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1 Linear vs. Nonlinear -- 2 Planar Dynamical Systems -- 3 Mathematical Background -- 4 Input-Output Analysis -- 5 Lyapunov Stability Theory -- 6 Applications of Lyapunov Theory -- 7 Dynamical Systems and Bifurcations -- 8 Basics of Differential Geometry -- 9 Linearization by State Feedback -- 10 Design Examples Using Linearization -- 11 Geometric Nonlinear Control -- 12 Exterior Differential Systems in Control -- 13 New Vistas: Multi-Agent Hybrid Systems -- References.
Sommario/riassunto	There has been a great deal of excitement in the last ten years over the emergence of new mathematical techniques for the analysis and control of nonlinear systems: Witness the emergence of a set of simplified tools for the analysis of bifurcations, chaos, and other complicated dynamical behavior and the development of a comprehensive theory of geometric nonlinear control. Coupled with this set of analytic advances has been the vast increase in computational power available for both the simulation and visualization of nonlinear systems as well as for the implementation in real time of sophisticated, real-time nonlinear control laws. Thus, technological advances have bolstered the impact of analytic advances and produced a tremendous variety of new problems and applications that are nonlinear in an essential way. Nonlinear controllaws have been

implemented for sophisticated flight control systems on board helicopters, and vertical take off and landing aircraft; adaptive, nonlinear control laws have been implemented for robot manipulators operating either singly, or in cooperation on a multi-fingered robot hand; adaptive control laws have been implemented for jet engines and automotive fuel injection systems, as well as for automated highway systems and air traffic management systems, to mention a few examples. Bifurcation theory has been used to explain and understand the onset of flutter in the dynamics of aircraft wing structures, the onset of oscillations in nonlinear circuits, surge and stall in aircraft engines, voltage collapse in a power transmission network.
