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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Basic concepts of fuzzy sets -- Mamdani fuzzy systems -- Fuzzy control with Mamdani systems -- Modeling and control methods useful for fuzzy control -- Takagi-Sugeno fuzzy systems -- Parallel distributed control with Takagi-Sugeno fuzzy systems -- Estimation of static nonlinear functions from data -- Modeling of dynamic plants as fuzzy systems -- Adaptive fuzzy control.
Sommario/riassunto	A comprehensive introduction to fuzzy control and identification, covering both Mamdani and Takagi-Sugeno fuzzy systemsA fuzzy control system is a control system based on fuzzy logic, which is a mathematical system that makes decisions using human reasoning processes. This book presents an introductory-level exposure to two of the principal uses for fuzzy logic-identification and control. Drawn from the author's lectures presented in a graduate-level course over the past decade, this volume serves as a holistically suitable single text for a fuzzy control course, compiling the information often found in several different books on the subject into one.Starting with explanations of fuzzy logic, fuzzy control, and adaptive fuzzy control, the book introduces the concept of expert knowledge, which is the

basis for much of fuzzy control. From there, the author covers:. Basic concepts of fuzzy sets such as membership functions, universe of discourse, linguistic variables, linguistic values, support, a-cut, and convexity. Both Mamdani and Takagi-Sugeno fuzzy systems, showing how an effective controller can be designed for many complex nonlinear systems without mathematical models or knowledge of control theory while also suggesting several approaches to modeling of complex engineering systems with unknown models. How PID controllers can be made fuzzy and why this is useful. Position-form and incremental-form fuzzy controllers. How nonlinear systems can be modeled as fuzzy systems in several forms. How fuzzy tracking control and model reference control can be realized for nonlinear systems using parallel distributed techniques. The estimation of nonlinear systems using the batch least squares, recursive least squares, and gradient methods. The creation of direct and indirect adaptive fuzzy controllersAlso included are many examples, exercises, and computer program listings, all class-tested. Fuzzy Control and Identification is intended for seniors and first-year graduate students, and is suitable for any engineering department. No knowledge specific to any particular branch of engineering is required, and no knowledge of electrical, chemical, or mechanical systems is necessary to read and understand the material.