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Nota di contenuto	Introduction -- Part One Optimization -- Introduction to Optimization -- Linear Optimization -- Nonlinear Local Optimization -- Nonlinear Global Optimization -- Unsupervised Learning Techniques -- Model Complexity Optimization -- Summary of Part 1 -- Part Two Static Models -- Introduction to Static Models -- Linear, Polynomial, and Look-Up Table Models -- Neural Networks -- Fuzzy and Neuro-Fuzzy Models -- Local Linear Neuro-Fuzzy Models: Fundamentals -- Local Linear Neuro-Fuzzy Models: Advanced Aspects -- Input Selection for Local Model Approaches -- Gaussian Process Models (GPMs) -- Summary of Part Two -- Part Three Dynamic Models -- Linear Dynamic System Identification -- Nonlinear Dynamic System Identification -- Classical Polynomial Approaches.-Dynamic Neural and Fuzzy Models -- Dynamic Local Linear Neuro-Fuzzy Models -- Neural Networks with Internal Dynamics -- Part Five Applications -- Applications of Static Models -- Applications of Dynamic Models -- Design of Experiments -- Input Selection Applications -- Applications of Advanced Methods -- LMN Toolbox -- Vectors and Matrices -- Statistics -- Reference -- Index.
Sommario/riassunto	This book provides engineers and scientists in academia and industry with a thorough understanding of the underlying principles of

nonlinear system identification. It equips them to apply the models and methods discussed to real problems with confidence, while also making them aware of potential difficulties that may arise in practice.

Moreover, the book is self-contained, requiring only a basic grasp of matrix algebra, signals and systems, and statistics. Accordingly, it can also serve as an introduction to linear system identification, and provides a practical overview of the major optimization methods used in engineering. The focus is on gaining an intuitive understanding of the subject and the practical application of the techniques discussed. The book is not written in a theorem/proof style; instead, the mathematics is kept to a minimum, and the ideas covered are illustrated with numerous figures, examples, and real-world applications. In the past, nonlinear system identification was a field characterized by a variety of ad-hoc approaches, each applicable only to a very limited class of systems. With the advent of neural networks, fuzzy models, Gaussian process models, and modern structure optimization techniques, a much broader class of systems can now be handled. Although one major aspect of nonlinear systems is that virtually every one is unique, tools have since been developed that allow each approach to be applied to a wide variety of systems. .
