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Titolo	Recent Advances in Nonlinear Dynamics and Synchronization : With Selected Applications in Electrical Engineering, Neurocomputing, and Transportation // edited by Kyandoghene Kyamakya, Wolfgang Mathis, Ruedi Stoop, Jean Chamberlain Chedjou, Zhong Li
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Descrizione fisica	1 online resource (XII, 367 p. 137 illus., 69 illus. in color.)
Collana	Studies in Systems, Decision and Control, , 2198-4182 ; ; 109
Disciplina	531.0151535
Soggetti	Computational complexity Statistical physics Electrical engineering Transportation engineering Traffic engineering Computational intelligence Complexity Applications of Nonlinear Dynamics and Chaos Theory Electrical Engineering Transportation Technology and Traffic Engineering Computational Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	On the Construction of Dissipative Polynomial Nambu Systems with Limit Cycles -- On the dynamics of chaotic systems with multiple attractors: A case study -- Multivaluedness Aspects in Self-organization, Complexity and Computations Investigations by Strong Anticipation -- A Review of Traffic Light Control Systems and Introduction of a Control Concept Based on Coupled Nonlinear Oscillators -- Neural network based calibration of macroscopic traffic flow models -- Travelers of the second modernity: where technological and social dynamic complexity meet each other -- Design of a Chaotic Pulse-Position Modulation Circuit -- Emotion Recognition involving

Physiological and Speech Signals: A Comprehensive Review --  
Neurocomputing-based Matrix Inversion: A critical Review of the  
related State-of-the-Art.

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Sommario/riassunto

This book focuses on modelling and simulation, control and optimization, signal processing, and forecasting in selected nonlinear dynamical systems, presenting both literature reviews and novel concepts. It develops analytical or numerical approaches, which are simple to use, robust, stable, flexible and universally applicable to the analysis of complex nonlinear dynamical systems. As such it addresses key challenges are addressed, e.g. efficient handling of time-varying dynamics, efficient design, faster numerical computations, robustness, stability and convergence of algorithms. The book provides a series of contributions discussing either the design or analysis of complex systems in sciences and engineering, and the concepts developed involve nonlinear dynamics, synchronization, optimization, machine learning, and forecasting. Both theoretical and practical aspects of diverse areas are investigated, specifically neurocomputing, transportation engineering, theoretical electrical engineering, signal processing, communications engineering, and computational intelligence. It is a valuable resource for students and researchers interested in nonlinear dynamics and synchronization with applications in selected areas.

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