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Nota di contenuto	Uncertainty Analysis of a Near-field Acoustic Levitation System -- Uncertainty Quantification and Statistics of Curves and Surfaces -- Meta-heuristic approaches for automatic roof measurement in solar panels installations -- Solution of a Coupled Conduction-Radiation Inverse Heat Transfer Problem with the Topographical Global Optimization Method -- Towards Intelligent Optimization of Design Strategies of Cyber Physical Systems: Measuring Efficacy through Evolutionary Computations -- A Novel Approach for Leak Localization in Water Distribution Networks using Computational Intelligence -- Determination of Nano-Aerosol Size Distribution using Differential Evolution -- Estimation of Timewise Varying Boundary Heat Flux via Bayesian Filters and Markov Chain Monte Carlo Method -- Health monitoring of automotive batteries in fast-charging conditions through

a fuzzy model of the incremental capacity -- Fault Detection and Isolation in Smart Grid Devices using Probabilistic Boolean Networks -- Evaluating Automated Machine Learning on supervised regression Traffic Forecasting Problems -- Multi-robot coalition formation and task allocation using immigrant based adaptive genetic algorithms -- Lidar and Non-Extensive Particle Filter for UAV Autonomous Navigation -- Quasi-optimization of the Time Dependent Travelling Salesman Problem by Intuitionistic Fuzzy Model and Memetic Algorithm -- Analyzing Information and Communications Technology national indices by using Fuzzy Datamining Techniques.

Sommario/riassunto

This book explores applications of computational intelligence in key and emerging fields of engineering, especially with regard to condition monitoring and fault diagnosis, inverse problems, decision support systems and optimization. These applications can be beneficial in a broad range of contexts, including: water distribution networks, manufacturing systems, production and storage of electrical energy, heat transfer, acoustic levitation, uncertainty and robustness of infinite-dimensional objects, fatigue failure prediction, autonomous navigation, nanotechnology, and the analysis of technological development indexes. All applications, mathematical and computational tools, and original results are presented using rigorous mathematical procedures. Further, the book gathers contributions by respected experts from 22 different research centers and eight countries: Brazil, Cuba, France, Hungary, India, Japan, Romania and Spain. The book is intended for use in graduate courses on applied computation, applied mathematics, and engineering, where tools like computational intelligence and numerical methods are applied to the solution of real-world problems in emerging areas of engineering.