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Titolo	Applications of Evolutionary Computing [[electronic resource]] : Evoworkshops: EvoBIO, EvoCOMNET, EvoHot, EvoIASP, EvoMUSART, and EvoSTOC / / edited by Franz Rothlauf, Jürgen Branke, Stefano Cagnoni, David W. Corne, Rolf Drechsler, Yaochu Jin, Penousal Machado, Elena Marchiori, Juan Romero, George D. Smith, Giovanni Squillero
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Nota di contenuto	EvoBIO Contributions -- Evolutionary Biclustering of Microarray Data -- A Fuzzy Viterbi Algorithm for Improved Sequence Alignment and Searching of Proteins -- Tabu Search Method for Determining Sequences of Amino Acids in Long Polypeptides -- Order Preserving Clustering over Multiple Time Course Experiments -- Can Neural Network Constraints in GP Provide Power to Detect Genes Associated with Human Disease? -- A Class of Pareto Archived Evolution Strategy

Algorithms Using Immune Inspired Operators for Ab-Initio Protein Structure Prediction -- Neural Networks and Temporal Gene Expression Data -- Bayesian Learning with Local Support Vector Machines for Cancer Classification with Gene Expression Data -- Genes Related with Alzheimer's Disease: A Comparison of Evolutionary Search, Statistical and Integer Programming Approaches -- Syntactic Approach to Predict Membrane Spanning Regions of Transmembrane Proteins -- An Evolutionary Approach for Motif Discovery and Transmembrane Protein Classification -- Differential Evolution and Its Application to Metabolic Flux Analysis -- GEMPLS: A New QSAR Method Combining Generic Evolutionary Method and Partial Least Squares -- EvoCOMNET Contributions -- A Performance Evaluation Framework for Nature Inspired Routing Algorithms -- Empirical Models Based on Hybrid Intelligent Systems for Assessing the Reliability of Complex Networks -- A Study of an Iterated Local Search on the Reliable Communication Networks Design Problem -- Unsupervised Anomaly Detection Based n an Evolutionary Artificial Immune Network -- Evolutionary Algorithms for Location Area Management -- EvoHOT Contributions -- Evolutionary Design of Gate-Level Polymorphic Digital Circuits -- A Biological Development Model for the Design of Robust Multiplier -- Automatic Completion and Refinement of Verification Sets for Microprocessor Cores -- A Genetic Algorithm for VLSI Floorplanning Using O-Tree Representation -- Evolving Reversible Circuits for the Even-Parity Problem -- Counter-Based Ant Colony Optimization as a Hardware-Oriented Meta-heuristic -- Use of an Evolutionary Tool for Antenna Array Synthesis -- EvoIASP Contributions -- A Coevolutionary Approach for Clustering with Feature Weighting Application to Image Analysis -- A New Evolutionary Algorithm for Image Segmentation -- An Interactive EA for Multifractal Bayesian Denoising -- Object Detection for Computer Vision Using a Robust Genetic Algorithm -- An Evolutionary Infection Algorithm for Dense Stereo Correspondence -- Automatic Image Enhancement Driven by Evolution Based on Ridgelet Frame in the Presence of Noise -- Practical Evaluation of Efficient Fitness Functions for Binary Images -- Selective SVMs Ensemble Driven by Immune Clonal Algorithm -- Sensory-Motor Coordination in Gaze Control -- Region Merging for Severe Oversegmented Images Using a Hierarchical Social Metaheuristic -- Automated Photogrammetric Network Design Using the Parisian Approach -- Design of Fast Multidimensional Filters Using Genetic Algorithms -- Genetic-Fuzzy Optimization Algorithm for Adaptive Learning of Human Vocalization in Robotics -- Evolving Parameters of Surveillance Video Systems for Non-overfitted Learning -- A Multistage Approach to Cooperatively Coevolving Feature Construction and Object Detection -- An Implicit Context Representation for Evolving Image Processing Filters -- Learning Weights in Genetic Programs Using Gradient Descent for Object Recognition -- EvoMUSART Contributions -- Open Problems in Evolutionary Music and Art -- Genetic Paint: A Search for Salient Paintings -- Artificial Life, Death and Epidemics in Evolutionary, Generative Electronic Art -- The Electric Sheep Screen-Saver: A Case Study in Aesthetic Evolution -- Swarm Tech-Tiles Tim -- Evolutionary Methods for Ant Colony Paintings -- Evolutionary Search for Musical Parallelism -- Developing Fitness Functions for Pleasant Music: Zipf's Law and Interactive Evolution Systems -- Understanding Expressive Music Performance Using Genetic Algorithms -- Toward User-Directed Evolution of Sound Synthesis Parameters -- Playing in the Pheromone Playground: Experiences in Swarm Painting -- Convergence Synthesis of Dynamic Frequency Modulation Tones Using an Evolution Strategy -- Granular Sampling Using a Pulse-Coupled Network of Spiking Neurons

-- Growing Music: Musical Interpretations of L-Systems -- Exploring Rhythmic Automata -- Extra-Music(ologic)al Models for Algorithmic Composition -- EvoSTOC Contributions -- The Memory Indexing Evolutionary Algorithm for Dynamic Environments -- Dynamic Decentralized Packet Clustering in Networks -- MOEA-Based Approach to Delayed Decisions for Robust Conceptual Design -- Unified Particle Swarm Optimization in Dynamic Environments -- Shaky Ladders, Hyperplane-Defined Functions and Genetic Algorithms: Systematic Controlled Observation in Dynamic Environments -- A Hierarchical Evolutionary Algorithm with Noisy Fitness in Structural Optimization Problems -- Assortative Mating in Genetic Algorithms for Dynamic Problems -- A Hybrid Approach Based on Evolutionary Strategies and Interval Arithmetic to Perform Robust Designs.

Sommario/riassunto

Evolutionary computation (EC) techniques are e?cient nature-inspired pl- ning and optimization methods based on the principles of natural evolution and genetics. Due to their e?ciency and the simple underlying principles, these methods can be used for a large number of problems in the context of problem solving,optimization,andmachinelearning. Alargeandcontinuouslyincreasing number of researchers and practitioners make use of EC techniques in many - plication domains. The book at hand presents a careful selection of relevant EC applications combined with thorough examinations of techniques for a successful application of EC. The presented papers illustrate the current state of the art in the application of EC and should help and inspire researchers and practitioners to develop e?cient EC methods for design and problem solving. All papers in this book were presented during EvoWorkshops 2005, which was a varying collection of workshops on application-oriented aspects of EC. Since 1999, the format of the EvoWorkshops has proved to be very successful and well representative of the advances in the application of EC. Consequently, over the last few years, EvoWorkshops has become one of the major events addressing the application of EC. In contrast to other large conferences in the EC ?eld, the EvoWorkshops focus solely on application aspects of EC and are an important link between EC research and the application of EC in a large variety of di?erent domains.