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Nota di contenuto	Neural Networks and Quantum Neurology: Speculative Heuristic Towards the Architecture of Psychism -- Physical Basis of Quantum Computation and Cryptography -- Brain Organization and Computation -- Concepts and Models for the Future Generation of Emotional and Intelligent Systems -- Modeling Consciousness for Autonomous Robot Exploration -- An Insect-Inspired Active Vision Approach for Orientation Estimation with Panoramic Images -- Natural Interaction

with a Robotic Head -- A Network of Interneurons Coupled by Electrical Synapses Behaves as a Coincidence Detector -- A Computational Structure for Generalized Visual Space-Time Chromatic Processing -- Physiological Laws of Sensory Visual System in Relation to Scaling Power Laws in Biological Neural Networks -- ANF Stochastic Low Rate Stimulation -- Functional Identification of Retinal Ganglion Cells Based on Neural Population Responses -- Towards a Neural-Networks Based Therapy for Limbs Spasticity -- A Bio-inspired Architecture for Cognitive Audio -- An Adaptable Multichannel Architecture for Cortical Stimulation -- Spiking Neural P Systems. Power and Efficiency -- Solving Subset Sum in Linear Time by Using Tissue P Systems with Cell Division -- On a P?un's Conjecture in Membrane Systems -- A Parallel DNA Algorithm Using a Microfluidic Device to Build Scheduling Grids -- P System Models of Bistable, Enzyme Driven Chemical Reaction Networks -- A Novel Improvement of Neural Network Classification Using Further Division of Partition Space -- Morphisms of ANN and the Computation of Least Fixed Points of Semantic Operators -- Predicting Human Immunodeficiency Virus (HIV) Drug Resistance Using Recurrent Neural Networks -- Error Weighting in Artificial Neural Networks Learning Interpreted as a Metaplasticity Model -- A First Approach to Birth WeightPrediction Using RBFNNs -- Filtering Documents with a Hybrid Neural Network Model -- A Single Layer Perceptron Approach to Selective Multi-task Learning -- Multi-task Neural Networks for Dealing with Missing Inputs -- Theoretical Study on the Capacity of Associative Memory with Multiple Reference Points -- Classification and Diagnosis of Heart Sounds and Murmurs Using Artificial Neural Networks -- Requirements for Machine Lifelong Learning -- Multitask Learning with Data Editing -- Efficient BP Algorithms for General Feedforward Neural Networks -- Coefficient Structure of Kernel Perceptrons and Support Vector Reduction -- The Max-Relevance and Min-Redundancy Greedy Bayesian Network Learning Algorithm -- On Affect and Self-adaptation: Potential Benefits of Valence-Controlled Action-Selection -- Detecting Anomalous Traffic Using Statistical Discriminator and Neural Decisional Motor -- A Learning Based Widrow-Hoff Delta Algorithm for Noise Reduction in Biomedical Signals -- Hopfield Neural Network and Boltzmann Machine Applied to Hardware Resource Distribution on Chips -- A New Rough Set Reduct Algorithm Based on Particle Swarm Optimization -- Use of Kohonen Maps as Feature Selector for Selective Attention Brain-Computer Interfaces -- Nature-Inspired Congestion Control: Using a Realistic Predator-Prey Model -- EDNA: Estimation of Dependency Networks Algorithm -- Grammar-Guided Neural Architecture Evolution -- Evolutionary Combining of Basis Function Neural Networks for Classification -- Non-linear Robust Identification: Application to a Thermal Process -- Gaining Insights into Laser Pulse Shaping by Evolution Strategies -- Simulated Evolution of the Adaptability of the Genetic Code Using Genetic Algorithms -- GCS with Real-Valued Input -- A Study on Genetic Algorithms for the DARP Problem -- Optimization of the Compression Parameters of a Phonocardiographic Telediagnosis System Using Genetic Algorithms -- An Integrated Resolution of Joint Production and Maintenance Scheduling Problem in Hybrid Flowshop -- Improving Cutting-Stock Plans with Multi-objective Genetic Algorithms -- Sensitivity Analysis for the Job Shop Problem with Uncertain Durations and Flexible Due Dates -- Comparative Study of Meta-heuristics for Solving Flow Shop Scheduling Problem Under Fuzziness -- Fusion of Neural Gas -- Decision Making Graphical Tool for Multiobjective Optimization Problems -- Electromagnetic Interference Reduction in Electronic Systems Cabinets by Means of Genetic Algorithms Design --

Evolutionary Tool for the Incremental Design of Controllers for Collective Behaviors -- A Possibilistic Approach for Mining Uncertain Temporal Relations from Diagnostic Evolution Databases -- Temporal Abstraction of States Through Fuzzy Temporal Constraint Networks -- Spieldose: An Interactive Genetic Software for Assisting to Music Composition Tasks.

Sommario/riassunto

This two-volume set LNCS 4527 and LNCS 4528 constitutes the refereed proceedings of the Second International Work-Conference on the Interplay between Natural and Artificial Computation, IWINAC 2007, held in La Manga del Mar Menor, Spain in June 2007. This 126 revised papers presented are thematically divided into two volumes; the first includes all the contributions mainly related with theoretical, conceptual and methodological aspects linking AI and knowledge engineering with neurophysiology, clinics and cognition. The second volume contains all the contributions connected with biologically inspired methods and techniques for solving AI and knowledge engineering problems in different application domains.