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Titolo	Biologically Inspired Cognitive Architectures (BICA) for Young Scientists : Proceedings of the First International Early Research Career Enhancement School (FIERCES 2016) // edited by Alexei V. Samsonovich, Valentin V. Klimov, Galina V. Rybina
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Descrizione fisica	1 online resource (296 p.)
Collana	Advances in Intelligent Systems and Computing, , 2194-5365 ; ; 449
Disciplina	006.3
Soggetti	Computational intelligence Artificial intelligence Neurosciences Cognitive psychology Biomedical engineering Computational Intelligence Artificial Intelligence Neuroscience Cognitive Psychology Biomedical Engineering and Bioengineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Models of Autonomous Cognitive Agents -- Differentiation of Groundwater Tax Rates as an Element of Improving the Economic Mechanism in the State Groundwater Extraction Management -- Users' of Information Systems Protection Analysis from Malefactor's Social Engineering Attacks Taking into Account Malefactor's Competence Profile -- Character Reasoning of the Social Network Users on the Basis of the Content Contained on Their Personal Pages -- Bayesian Optimization of Spiking Neural Network Parameters to Solving the Time Series Classification Task -- Simulation of Learning in Neuronal Culture -- Unsupervised Neural Architecture for Saliency Detection: Extended

Version -- Active adaptation of expert-based suggestions in ladieswear recommender system LookBooksClub via Reinforcement Learning -- Visual Analytics Support for Carbon Nanotube Design Automation -- A model of Neurodynamics of Hippocampal Formation Neurons Performing Spatial Processing Based on Even Cyclic Inhibitory Networks -- Feature Selection for Time-Series Prediction in Case of Undetermined Estimation -- A New Approach for Semantic Cognitive Maps Creation and Evaluation Based on Affix Relations -- On Alternative Instruments for the fMRI Data Analysis: General Linear Model Versus Algebraic Topology Approach -- Application of Hopfield Neural Network to the N-Queens Problem -- Simulation of a Fear-Like State on a Model of Dopamine System of Rat Brain -- Spatial and Temporal Parameters of Eye Movements During Viewing of Affective Images -- MEG Data Analysis Using the Empirical Mode Decomposition Method -- Evolutional Approach to Image Processing on the Example of Microsections -- "Cognovisor" for the Human Brain: Towards Mapping of Thought Processes by a Combination of fMRI and Eye-tracking -- Dynamic Intelligent Systems Integration and Evolution of Intelligent Control Systems Architectures -- Automated Planning: Usage for Integrated Expert Systems Construction -- Some Aspects of Temporal Knowledge Acquisition and Representation in Dynamic Integrated Expert Systems -- Collaboration of All-purpose Static Solver, Temporal Reasoning and Simulation Modeling Tools in Dynamic Integrated Expert Systems -- Some Aspects of Intellectual Tutoring Based on the Integrated Tutoring Expert Systems Usage -- To the Question of Learnability of a Spiking Neuron with Spike-Timing-Dependent Plasticity in Case of Complex Input Signals -- Causal Interactions Within the Default Mode Network as Revealed by Low-frequency Brain Fluctuations and Information Transfer Entropy -- Hierarchical Temporal Memory Implementation with Explicit States Extraction -- Swarm MeLiF: Feature Selection with Filter Combination Found via Swarm Intelligence -- Agent-based Model of Interactions in the Community of Investors and Producers -- Patterns of Spiking Activity of Neuronal Networks in Vitro as Memory Traces -- The Competency Management Based on Ontologies: Issues of Using in Organizations -- The Approach to Modeling of Synchronized Bursting in Neuronal Culture Using a Mathematical Model of a Neuron with Autoregulation Mechanism -- Dynamic Clustering of Connections Between fMRI Resting State Networks: A Comparison of Two Methods of Data Analysis -- Neural Network Solution of an Inverse Problem in Raman Spectroscopy of Multi-Component Solutions of Inorganic Salts -- Prediction of Relativistic Electrons Flux in the Outer Radiation Belt of the Earth Using Adaptive Methods -- Comparative Analysis of Residual Minimization and Artificial Neural Networks as Methods of Solving Inverse Problems: Test on Model Data -- A Biologically Inspired Architecture for Visual Self-Location.

Sommario/riassunto

This book presents cutting-edge research focused on current challenges towards the realization of Biologically Inspired intelligent agents, or Cognitive Architectures (BICA). The chapters are written by both world-recognized experts (including Antonio Chella, Olivier Georgeon, Oliver Kutz, Antonio Lieto, David Vernon, Paul Verschure, and others) and young researchers. Together, they constitute a good mixture of new findings with tutorial-based reviews and position papers, all presented at the First International Early Research Career Enhancement School on Biologically Inspired Cognitive Architectures (FIERCES on BICA 2016), held April 21-24 in Moscow, Russia. Most works included here cross boundaries between disciplines: from neuroscience to social science, from cognitive science to robotics, and

from bioengineering to artificial intelligence. A special emphasis is given to novel solutions to urgent problems that have been resisting traditional approaches for decades. Intended for providing readers with an update on biologically inspired approaches towards the computational replication of all the essential aspects of the human mind (the BICA Challenge), this book is expected to foster lively discussions on the topic and stimulate cross-disciplinary, cross-generation and cross-cultural collaboration.
