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| Nota di contenuto | Part I: Neuroinformatics and Artificial Intelligence -- Tree Inventory with LiDAR Data -- Towards Reliable Solar Atmospheric Parameters Neural-Based Inference -- Addressing Task Prioritization in Model-based Reinforcement Learning -- Automatic Generation of Conversational Skills from Dialog Datasets -- Part II: Neural Networks and Cognitive Sciences. Adaptive Behavior and Evolutionary Simulation -- Individual Topology Structure of Eye Movement Trajectories -- Neural Network Providing the Involvement of Voluntary Attention into the Processing and Conscious Perception of Sensory Information -- Alpha Rhythm Dynamics During Spoken Word Recognition -- Robotic Devices Control Based on Neuromorphic Classifiers of Imaginary Motor Commands -- A Software System for Training Motor Imagery in Virtual Reality -- On the Importance of Diversity -- “MYO-chat” – A New |

Computer Control System for People with Disabilities -- Low-bit Quantization of Transformer for Audio Speech Recognition -- A Model of Predicting and Using Regularities by an Autonomous Agent -- A Review of One-Shot Neural Architecture Search Methods -- Does a Recurrent Neural Network Use Reflection During a Reflexive Game? -- A Gender Genetic Algorithm and its Comparison with Conventional Genetic Algorithm -- Associations of Morphometric Changes of the Brain with the Levels of IGF1, a Multifunctional Growth Factor, and with Systemic Immune Parameters Reflect the Disturbances of Neuroimmune Interactions in Patients with Schizophrenia -- Part III: Modern Methods and Technologies in Neurobiology -- Dynamics of Background and Evoked Activity of Neurons in the Auditory Cortex of the Unanaesthetized Cat -- Search for Markers of Moderate Cognitive Disorders through Phase Synchronization between Rhythmic Photostimulus and EEG Pattern -- Astrocytes Enhance Image Representation Encoded in Spiking Neural Network -- Classification of Neuron Type Based on Average Activity -- Comparative Analysis of Statistical and Neural Network Classification Methods on the Example of Synthesized Data in the Stimulus-Independent Brain-Computer Interface Paradigm -- Shunting Effect of Synaptic Channels Located on Presynaptic Terminal -- Analysis of Appearances, Formation and Evolution of Biological Functional Systems -- The Reinforcement Learning Theory, Value Function, and the Nature of Value Function Calculation by the Insular Cortex -- To the Role of Inferior Olives in Cerebellar Neuromechanics -- Individual Differences in Mismatch-Induced c-Fos Expression in the Retrosplenial Cortex in Rats: Shift in Activity is Layer-Specific -- Sleep of Poor and Good Nappers under the Afternoon Exposure to Weak 2-Hz/8-Hz Electromagnetic Fields -- Part IV: Applications of Neural Networks -- Classification of Light Microscopy Image Using Probabilistic Bayesian Neural Network -- SPICE Model of Analog Content-Addressable Memory Based on 2G FeFET Crossbar -- IQ-GAN: Instance Quantized Image Synthesis -- Specifics of Crossbar Resistor Arrays -- Recurrent and Graph Neural Networks for Particle Tracking at the BM@N Experiment -- Modeling of a Neural Network Algorithm for Suppressing Non-Stationary Interference in an Adaptive Antenna Array -- Learning Various Locomotion Skills from Scratch with Deep Reinforcement Learning -- Center3dAugNet: Effect of Rotation Representation on One-Stage Joint Car Detection and 6D-Pose Estimation -- Global memory transformer for processing long documents -- Development of the Convolutional Neural Network for Defining the Renal Pathology Using Computed Tomography Images -- Possibility of Using Various Architectures of Convolutional Neural Networks in the Problem of Determining the Type of Rhythm -- DeepPavlov Topics: Topic Classification Dataset for Conversational Domain in English -- Multi-Input Convolutional Neural Networks in Real-Time Semantic Segmentation Tasks -- Integration of Data and Algorithms in Solving Inverse Problems of Spectroscopy of Solutions by Machine Learning Methods -- Investigation of Pareto Front of Neural Network Approximation of Solution of Laplace Equation in Two Statements: with Discontinuous Initial Conditions or with Measurement Data? -- Multitask learning for extensive object description to improve scene understanding on monocular video -- Use of Classification Algorithms to Predict the Grade of Geomagnetic Disturbance -- Information processing in spiking neuron-astrocyte network in ageing -- Multilingual Case-insensitive Named Entity Recognition -- Multi-level Pipeline for Data Mining with Similar Structure -- Creating a Brief Review of Judicial Practice Using Clustering Methods -- Part V: Neural Network Theory, Concepts and Architectures -- "Gas" instead of

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| | “Liquid”: which Liquid State Machine is Better? -- Using a Resistor Array to Tackle Optimization Problems -- Generative Adversarial Networks as an Approach to Unsupervised Link Prediction Problem -- DGAC: Dialog Graph AutoConstruction up on Data with a Regular Structure -- Relay System of Differential Equations with Delay as a Perceptron Model -- Analysis of Predictive Capabilities of Adaptive Multilayer Models with Physics-Based Architecture for Duffing Oscillator? -- An Attempt to Formalize the Formulation of the Network Architecture Search Problem for Convolutional Neural Networks -- Use of Conditional Variational Autoencoders and Partial Least Squares in Solving an Inverse Problem of Spectroscopy -- On the Similarities between Denoising Diffusion Models and Autoencoders. |
| Sommario/riassunto | This book describes new theories and applications of artificial neural networks, with a special focus on answering questions in neuroscience, biology and biophysics and cognitive research. It covers a wide range of methods and technologies, including deep neural networks, large-scale neural models, brain–computer interface, signal processing methods, as well as models of perception, studies on emotion recognition, self-organization and many more. The book includes both selected and invited papers presented at the XXIV International Conference on Neuroinformatics, held on October 17–21, 2022, in Moscow, Russia. |