1. Record Nr. UNISA996465780703316

Titolo	Emergent Neural Computational Architectures Based on Neuroscience [[electronic resource]] : Towards Neuroscience-Inspired Computing / / edited by Stefan Wermter, Jim Austin, David Willshaw
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2001
ISBN	3-540-44597-8
Edizione	[1st ed. 2001.]
Descrizione fisica	1 online resource (X, 582 p.)
Collana	Lecture Notes in Artificial Intelligence ; ; 2036
Disciplina	006.3/2
Soggetti	Artificial intelligence Computers Algorithms Pattern recognition Neurology Neurosciences Artificial Intelligence Computation by Abstract Devices Algorithm Analysis and Problem Complexity Pattern Recognition Neurology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Towards Novel Neuroscience-Inspired Computing -- Towards Novel Neuroscience-Inspired Computing -- Modular Organisation and Robustness -- Images of the Mind: Brain Images and Neural Networks -- Stimulus-Independent Data Analysis for fMRI -- Emergence of Modularity within One Sheet of Neurons: A Model Comparison -- Computational Investigation of Hemispheric Specialization and Interactions -- Explorations of the Interaction between Split Processing and Stimulus Types -- Modularity and Specialized Learning: Mapping between Agent Architectures and Brain Organization -- Biased Competition Mechanisms for Visual Attention in a Multimodular Neurodynamical System -- Recurrent Long-Range Interactions in Early

Vision -- Neural Mechanisms for Representing Surface and Contour Features -- Representations of Neuronal Models Using Minimal and Bilinear Realisations -- Collaborative Cell Assemblies: Building Blocks of Cortical Computation -- On the Influence of Threshold Variability in a Mean-Field Model of the Visual Cortex -- Towards Computational Neural Systems through Developmental Evolution -- The Complexity of the Brain: Structural, Functional, and Dynamic Modules -- Timing and Synchronisation -- Synchronisation, Binding, and the Role of Correlated Firing in Fast Information Transmission -- Segmenting State into Entities and Its Implication for Learning -- Temporal Structure of Neural Activity and Modelling of Information Processing in the Brain -- Role of the Cerebellum in Time-Critical Goal-Oriented Behaviour: Anatomical Basis and Control Principle -- Locust Olfaction -- Temporal Coding in Neuronal Populations in the Presence of Axonal and Dendritic Conduction Time Delays -- The Role of Brain Chaos -- Neural Network Classification of Word Evoked Neuromagnetic Brain Activity -- Simulation Studies of the Speed of Recurrent Processing -- Learning and Memory Storage -- The Dynamics of Learning and Memory: Lessons from Neuroscience -- Biological Grounding of Recruitment Learning and Vicinal Algorithms in Long-Term Potentiation -- Plasticity and Nativism: Towards a Resolution of an Apparent Paradox -- Cell Assemblies as an Intermediate Level Model of Cognition -- Modelling Higher Cognitive Functions with Hebbian Cell Assemblies -- Spiking Associative Memory and Scene Segmentation by Synchronization of Cortical Activity -- A Familiarity Discrimination Algorithm Inspired by Computations of the Perirhinal Cortex -- Linguistic Computation with State Space Trajectories -- Robust Stimulus Encoding in Olfactory Processing: Hyperacuity and Efficient Signal Transmission -- Finite-State Computation in Analog Neural Networks: Steps towards Biologically Plausible Models? -- An Investigation into the Role of Cortical Synaptic Depression in Auditory Processing -- The Role of Memory, Anxiety, and Hebbian Learning in Hippocampal Function: Novel Explorations in Computational Neuroscience and Robotics -- Using a Time-Delay Actor-Critic Neural Architecture with Dopamine-Like Reinforcement Signal for Learning in Autonomous Robots -- Connectionist Propositional Logic A Simple Correlation Matrix Memory Based Reasoning System -- Analysis and Synthesis of Agents That Learn from Distributed Dynamic Data Sources -- Connectionist Neuroimaging.

Sommario/riassunto

It is generally understood that the present approachs to computing do not have the performance, flexibility, and reliability of biological information processing systems. Although there is a comprehensive body of knowledge regarding how information processing occurs in the brain and central nervous system this has had little impact on mainstream computing so far. This book presents a broad spectrum of current research into biologically inspired computational systems and thus contributes towards developing new computational approaches based on neuroscience. The 39 revised full papers by leading researchers were carefully selected and reviewed for inclusion in this anthology. Besides an introductory overview by the volume editors, the book offers topical parts on modular organization and robustness, timing and synchronization, and learning and memory storage.