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| 1. Record Nr.           | UNINA9910298271403321   |
| Titolo                  | Advances in Cognitive Neurodynamics (IV) : Proceedings of the Fourth International Conference on Cognitive Neurodynamics - 2013 // edited by Hans Liljenström   |
| Pubbl/distr/stampa      | Dordrecht : , : Springer Netherlands : , : Imprint : Springer, , 2015   |
| ISBN                    | 94-017-9548-7   |
| Edizione                | [1st ed. 2015.]   |
| Descrizione fisica      | 1 online resource (582 p.)  |
| Collana                 | Advances in Cognitive Neurodynamics, , 2213-3569  |
| Disciplina              | 612.8233  |
| Soggetti                | Neurosciences<br>Statistical physics<br>Biomathematics<br>Cognitive psychology<br>Psychopharmacology<br>Applications of Nonlinear Dynamics and Chaos Theory<br>Physiological, Cellular and Medical Topics<br>Cognitive Psychology   |
| 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       | Preface -- Part I: Interactive and Social Neurodynamics.-Brain Network Efficiency and Intelligent Scores of Children -- Modeling the Interaction of Emotion and Cognition -- Group Neurodynamics: Conceptual and Experimental Framework -- The Activity Modalities – A-priori Categories of Coordination -- On the Use of Cognitive Neuroscience in Industrial Applications by using Neuroelectromagnetic Recordings -- A Study of c-VEP/SSVEP BCI Hybrid System -- Part II: Higher Mental Functions and Dysfunctions -- Memory Consolidation from Seconds to Weeks through Autonomous Reinstatement Dynamics in a Three-stage Neural Network Model -- Biologically Inspired Models of Decision Making -- Decision Making Mechanisms Based on Fundamental Principles of Thermodynamics -- Reward Prediction in Prefrontal Cortex and Striatum -- The Integrated Neuropsychiatric Assessment System - A Generic Platform for Cognitive Neurodynamics Research -- |

Interaction Between Rhinal and Orbitofrontal Cortices Contributes to Reward Seeking Behavior -- Exploring Dynamic Temporal-Topological Structure of Brain Network within ADHD -- Study on the EEG Rhythm in Meditation -- Part III: Cortical Dynamics in Perception and Cognition -- Set-Related Neurocognitive Networks -- The Dissipative Many-body Model and Phase Transitions in Brain Nonlinear Dynamics -- Advanced Models of Cortical Dynamics in Perception -- Modeling Cortical Singularities During the Cognitive Cycle Using Random Graph Theory -- Concept Cells in the Human Brain -- EEG Spatiotemporal Pattern Classification of the Stimuli on Different Fingers -- Part IV: Neurodynamics of Sensory Systems -- Time Varying VEP Evaluation as a Prediction of Vision Fatigue Using Stimulated Brain-Computer Interface -- Spike Synchronization in a Network Model of the Olfactory Bulb -- Laterality of Gamma-Oscillations in Primate Supplementary Motor Area During Performance of Visually-guided Movements -- Thalamocortical and Intracortical Contributions to Task-related Cross-frequency Coupling in Auditory Cortex -- Temporal Characteristics of the Steady State Visual Evoked Potentials -- A Novel Neural Coding Mechanism Study of Interaural Time Difference Detection -- Part V: Multi-scale Neural Network Dynamics -- Representation-Implementation Trade-off in Cortico-limbic Ganglio-basal Loops -- Source Differences in ERP Components Between Pain and Tactile Processing -- The Time-Varying Causal Coupling in Brain and Organization of its Networks -- Enhancement of Weak Signal Detection in Parallel Arrays of Integrate-and-fire Neurons by Negative Spatial Correlation -- A Computational Model of Hippocampal-VTA Microcircuits: Why Expectation of Reward in Rat Striatum at Choice Point is Covert -- A Computational Model of Cortical Pathways Formed with Electroencephalogram Synchronization -- Neurodynamics of Up and Down Transitions in a Network Model -- Part VI: Oscillations, Synchronization and Synaptic Plasticity -- STDP Produces Well Behaved Oscillations and Synchrony -- Robust Synchronization in Excitatory Networks with Medium Synaptic Delay -- Synchronization in Neuronal Population with Phase Response -- Geometry of Dynamic Movement Primitives in Neural Space: A FORCE-learning Approach -- STDP Contribution of Endogenous Acetylcholine to STDP Induction -- Bidirectional Wave Propagations can Improve Loop Finding Time -- Phase Coupling Between Hippocampal CA1 and Prefrontal Cortex in a Depression-model of Rats Indicating Impaired Synaptic Plasticity -- Part VII: Neural Computation and Information Processing -- Mapping of Cortical Avalanches to the Striatum -- Gauss-Markov Processes for Neuronal Models including Reversal Potentials -- On Super-Turing Neural Computation -- Chasing Cognitive Neurodynamics by Single-trial Analysis of Electroencephalogram (EEG) -- Brain: Biological noise-based logic -- Time-dependent Approximate and Sample Entropy Measures for Brain Death Diagnosis -- Preliminary Study on EEG-based Analysis of Discomfort Caused by Watching 3D Images -- EEG-EMG Analysis on Corticomuscular Coherence of Middle Finger Flexion Tasks -- Part VIII: Signal Transmission at Cellular and Network Levels -- Bursting in Two-coupled Cells Network in the Pre-Bötzing Complex -- An Electrodiffusion Formalism for Ion Concentration Dynamics in Excitable Cells and the Extracellular Space Surrounding Them -- Dispersion in Excitatory Synaptic Response -- Research on Neural Energy Coding -- Neural Field Dynamics and the Development of the Cerebral Cortex -- Signal Processing by Ephaptic Coupling of Hodgkin-Huxley Axons -- Part IX: Quantum Cognition -- Modeling Concept Combinations in a Quantum-theoretic Framework -- Beyond the Quantum Formalism: Consequences of a Neural-oscillator Model to Quantum Cognition --

Random Variables Recorded under Mutually Exclusive Conditions: Contextuality-by-default -- Weak vs. Strong Quantum Cognition -- Quantum Ontology: A New Direction for Cognitive Modeling -- Part X: Dynamic Brain Forum -- Cue-dependent Modulation of Synchrony in Primates' Medial Motor Areas -- Multisynaptic State Functions Characterizing the Acquisition of New Motor and Cognitive Skills -- Visual Hallucinations in Dementia with Lewy Bodies (I) - A Hodological View -- Dividing Roles and Ordering Information Flow in the Formation of Communication Systems: The Influence of Role Reversal Imitation -- Optical Imaging of Plastic Changes Induced by Fear Conditioning in Auditory, Visual, and Somatosensory Cortices -- Reward-modulated Motor Information in Dorsolateral Striatum Neurons -- Anxiolytic Drugs and Altered Hippocampal Theta Rhythms: The Quantitative Systems Pharmacological Approach -- Carbachol-induced Neuronal Oscillation in Rat Hippocampal Slices and Temperature -- Associative Memory Network with Dynamics Synapses -- Neural Dynamics for a Sudden Change in Other's Behavioral Rhythm -- Active Behaviors in Odor Sampling Constrain the Task for Cortical Processing -- Autonomous Situation Understanding and Self-referential Learning of Situation Representations in a Brain-inspired Architecture -- Metastable Activity Patterns in Cortical Dynamics and the Illusion of Localized Representations -- Memories as Bifurcations Shaped Through Sequential Learning -- Behavioral Interactions of Two Individual Arm Robots Using Independent Chaos in Recurrent Neural Networks -- Free Will and Spatiotemporal Neurodynamics -- High Frequency Oscillations for Behavioral Stabilization during Spatial Alternation -- Planning Based on One's Own Past and Other's Past during a Symbolic Communication Task -- Development of the Multimodal Integration in the Superior Colliculus and Its Link to Neonates Facial Preference -- Excitation-inhibition Balance of Prefrontal Neurons During the Execution of a Path-planning Task -- Simultaneous Multichannel Communication Using Chaos in a Recurrent Neural Network -- Self-reflective Mind in a Machine: Neural Correlates for Multidimensional Mind Perception -- Formation of Pyramidal Cell Clusters under Neocortical Balanced Competitive Learning -- Systems Biopsychiatry – the Cognitive Neurodynamics of Schizophrenia in an Integrated Systemic View -- Modeling the Genesis of Components in the Networks of Interacting Units -- Visual Hallucinations in Dementia with Lewy Bodies (II) – Computational Aspects -- Neural Dynamics Associated to Preferred Firing Sequences -- Evolution of Heterogeneous Network Modules via Maximization of Bi-directional Information Transmission -- Gamma-band Shift in the Activity of Rat Hippocampal CA1: A Comparison of Memory-guided and Visually-cued Spatial Choice -- Index.

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## Sommario/riassunto

Within our knowledge, the series of the International Conference on Cognitive Neurodynamics (ICCN) is the only conference series dedicating to cognitive neurodynamics. This volume is the proceedings of the 4th International Conference on Cognitive Neurodynamics held in 2013, which reviews the progress in this field since the 1st ICCN - 2007. The topics include: Neural coding and realistic neural network dynamics, Neural population dynamics, Firing Oscillations and Patterns in Neuronal Networks, Brain imaging, EEG, MEG, Sensory and Motor Dynamics, Global cognitive function, Multi-scalar Neurodynamics - from Physiology to Systems Theory, Neural computing, Emerging Technologies for Brain Computer Interfaces, Neural dynamics of brain disorders.

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