1. Record Nr. UNINA9910145435103321

Titolo	Neurodynamics of Cognition and Consciousness [[electronic resource] /] / edited by Leonid I. Perlovsky, Robert Kozma
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2007
ISBN	1-281-04570-5 9786611045708 3-540-73267-5
Edizione	[1st ed. 2007.]
Descrizione fisica	1 online resource (377 p.)
Collana	Understanding Complex Systems, , 1860-0832
Disciplina	612.8/233
Soggetti	Applied mathematics Engineering mathematics Statistical physics Dynamical systems Artificial intelligence Mathematical and Computational Engineering Complex Systems Artificial Intelligence Statistical Physics and Dynamical Systems Electronic books.
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 and index.
Nota di contenuto	Neurodynamics of Cognition and Consciousness -- Neurodynamics of Cognition and Consciousness -- Neurocognition and Human Consciousness -- Proposed Cortical “Shutter” Mechanism in Cinematographic Perception -- Toward a Complementary Neuroscience: Metastable Coordination Dynamics of the Brain -- The Formation of Global Neurocognitive State -- Neural Dynamic Logic of Consciousness: the Knowledge Instinct -- Using ADP to Understand and Replicate Brain Intelligence: The Next Level Design? -- Neurodynamics of Intentional Behavior Generation -- How Does the Brain Create, Change, and Selectively Override its Rules of Conduct? --

Cognitive Computing for Sensory Perception -- Shape Recognition Through Dynamic Motor Representations -- A Biologically Inspired Dynamic Model for Object Recognition -- A Brain-Inspired Model for Recognizing Human Emotional States from Facial Expression -- Engineering Applications of Olfactory Model from Pattern Recognition to Artificial Olfaction -- Recursive Nodes with Rich Dynamics as Modeling Tools for Cognitive Functions -- Giving Meaning to Cycles to Go Beyond the Limitations of Fixed Point Attractors -- Complex Biological Memory Conceptualized as an Abstract Communication System–Human Long Term Memories Grow in Complexity during Sleep and Undergo Selection while Awake -- Nonlinear High-Order Model for Dynamic Synapse with Multiple Vesicle Pools.

Sommario/riassunto

This book addresses dynamical aspects of brain functions and cognition. Experimental evidence in humans and other mammalians indicates that complex neurodynamics is crucial for the emergence of higher-level cognition and consciousness. Dynamical neural systems with encoding in limit cycle and non-convergent attractors have gained increasing popularity in the past decade. The role of synchronization, desynchronization, and intermittent synchronization on cognition has been studied extensively by various authors, in particular by authors contributing to the present volume. This volume gives an overview of recent advances in this interdisciplinary field of cognitive and computer science related to dynamics of cognition, including experimental studies, dynamical modelling and interpretation of cognitive experiments, and theoretical approaches. The following topics are covered in this book: spatio-temporal dynamics of neural correlates of higher-level cognition; dynamical neural memories, including continuous and discrete approaches; mathematical and physical models of cognition; experiments on dynamical aspects of cognition; interpretation of normal and abnormal cognitive behaviours. This volume is of great interest for researchers and graduate students working on practical and modeling aspects of cognitive dynamics. It provides a comprehensive introduction to the field, which can be used as a supplementary textbook for cognitive science and computer science and engineering graduate courses covering intelligent behavior in biological and artificial systems.