

Advances In Artificial Life 7th European Conference Ecacal 2003 Dortmund Germany September 14 17 2003 Proceedings Lecture Notes In Computer Science

Advances in Artificial LifeThird European Conference on Artificial Life, Granada, Spain, June 4 - 6, 1995 ProceedingsSpringer Science & Business Media

Proceedings from the ninth International Conference on Artificial Life; papers by scientists of many disciplines focusing on the principles of organization and applications of complex, life-like systems. Artificial Life is an interdisciplinary effort to investigate the fundamental properties of living systems through the simulation and synthesis of life-like processes. The young field brings a powerful set of tools to the study of how high-level behavior can arise in systems governed by simple rules of interaction. Some of the fundamental questions include: What are the principles of evolution, learning, and growth that can be understood well enough to simulate as an information process? Can robots be built faster and more cheaply by mimicking biology than by the product design process used for automobiles and airplanes? How can we unify theories from dynamical systems, game theory, evolution, computing, geophysics, and cognition? The field has contributed fundamentally to our understanding of life itself through computer models, and has led to novel solutions to complex real-world problems across high technology and human society. This elite biennial meeting has grown from a small workshop in Santa Fe to a major international conference. This ninth volume of the proceedings of the international A-life conference reflects the growing quality and impact of this interdisciplinary scientific community.

Novel Approaches towards Wastewater Treatment and Resource Recovery Technologies discusses various cost-efficient aspects of wastewater treatment along with resource recovery options. The book covers biological wastewater treatment, the application of membranes and their modifications, advanced oxidation techniques, and the application of nanoparticles for the enhancement of performance as well as various integrated technologies for resource recovery along with pilot scale potentials. The book covers both domestic and industrial wastewaters and provides resources for sustainable solutions. It provides the basic fundamentals and recent updated data. Case studies are included to give the glimpse of the real-world application. Similarly, pilot scale studies are considered for real life implementation of the concept. Covers sustainable, bio-electrochemical recovery of nutrients and other value-added products from wastewater Discusses advanced oxidation processes and membranes processes enabling treatment of complex wastewaters for final reuse Treats domestic/industrial operation and scale-up challenges of wastewater treatment for resource recovery Includes case studies and pilot scale studies for covering and providing all data and information to the readers in a systematic manner for their easy implementation

The two-volume set LNAI 5777 and LNAI 5778 constitutes the thoroughly refereed post-conference proceedings of the 10th European Conference, ECAI 2009, held in Budapest, Hungary, in September 2009. The 141 revised full papers presented were carefully reviewed and selected from 161 submissions. The papers are organized in topical sections on evolutionary developmental biology and hardware, evolutionary robotics, protocols and prebiotic chemistry, systems biology, artificial chemistry and neuroscience, group selection, ecosystems and evolution, algorithms and evolutionary computation, philosophy and arts, optimization, action, and agent connectivity, and swarm intelligence.

9th International Conference, KES 2005, Melbourne, Australia, September 14-16, 2005, Proceedings, Part IV

Introduction and Applications

7th Mexican International Conference on Artificial Intelligence, Alizapán de Zaragoza, Mexico, October 27-31, 2008 Proceedings

Explorations in the Complexity of Possible Life

Third European Conference on Artificial Life, Granada, Spain, June 4 - 6, 1995 Proceedings

Methods, Models, Simulations and Approaches Towards a General Theory of Change

Advances in Artificial Life

The book's contributing authors are among the top researchers in swarm intelligence. The book is intended to provide an overview of the subject to novices, and to offer researchers an update on interesting recent developments. Introductory chapters deal with the biological foundations, optimization, swarm robotics, and applications in new-generation telecommunication networks, while the second part contains chapters on more specific topics of swarm intelligence research.

Advanced Artificial Intelligence consists of 16 chapters. The content of the book is novel, reflects the research updates in this field, and especially summarises the author's scientific efforts over many years.

This book constitutes the refereed proceedings of the 8th International Conference on Parallel Problem Solving from Nature, PPSN 2004, held in Birmingham, UK, in September 2004. The 119 revised full papers presented were carefully reviewed and selected from 358 submissions. The papers address all current issues in biologically inspired computing; they are organized in topical sections on theoretical and foundational issues, new algorithms, applications, multi-objective optimization, co-evolution, robotics and multi-agent systems, and learning classifier systems and data mining.

The three volume set LNAI 4251, LNAI 4252, and LNAI 4253 constitutes the refereed proceedings of the 10th International Conference on Knowledge-Based Intelligent Information and Engineering Systems, KES 2006, held in Bournemouth, UK, in October 2006. The 480 revised papers presented were carefully reviewed and selected from about 1400 submissions. The papers present a wealth of original research results from the field of intelligent information processing.

7th Portuguese Conference on Artificial Intelligence, EPiA '95, Funchal, Madeira Island, Portugal, October 3 - 6, 1995. Proceedings

First International Workshop, BioADIT 2004, Lausanne, Switzerland, January 29-30, 2004. Revised Selected Papers

Third European Conference on Artificial Life, Granada, Spain, June 4-6, 1995 : Proceedings

International Seminar, Dagstuhl Castle, Germany, July 7-11, 2003, Revised Selected Papers

7th European Conference, ECAI 2003, Dortmund, Germany, September 14-17, 2003, Proceedings

Artificial Immune Systems

Progress in Artificial Intelligence

This book constitutes the refereed proceedings of the 5th International Conference on Artificial Immune Systems, ICARIS 2006. The book presents 34 revised full papers, are organized in topical sections on computer simulation of classical immunology, computer simulation of idiotypic network, immunoinformatics conceptual papers, pattern recognition type of application, optimization type of application, control and time-series type of application, danger theory inspired application, and text mining application.

This book offers a fresh perspective on organizational development and change theory and practice. Building on their recent work in quantum storytelling theory and complexity theory, Henderson and Boje consider the implications of fractal patterns in human behavior with a view toward ethics in organization development for the modern world. Building on Gilles Deleuze and Felix Guattari's (1987) ontology of multiple moving and intersecting fractal processes, the authors offer readers an understanding of how managing and organizing can be adapted to cope with the turbulence and complexity of different organizational situations and environments. They advocate a sustainable, co-creative brand of agency and introduce appropriate, simple tools to support organizational development practitioners. This book offers theory and research methods to management and organization scholars, along with praxis advice to practicing managers.

The Artificial Life term appeared more than 20 years ago in small corner of New Mexico, USA. Since then the area has developed dramatically, many researchers joining enthusiastically and research groups sprouting everywhere. This frenetic activity led to the emergence of several strands that are now established fields in themselves. We are now reaching a stage that one may describe as maturer: with more rigour, more benchmarks, more results, more stringent acceptance criteria, more applications, in brief, more sound science. This, which is the natural path of all new areas, comes at a price, however. A certain enthusiasm, a certain adventurousness from the early years is fading and may have been lost on the way. The field has become more reasonable. To counterbalance this and to encourage lively discussions, a conceptual track, where papers were judged on criteria like importance and/or novelty of the concepts proposed rather than the experimental/theoretical results, has been introduced this year. A conference on a theme as broad as Artificial Life is bound to be very - early, but a few tendencies emerged. First, trends like 'Robotics and Autonomous Agents' or 'Evolutionary Computation' are still extremely active and keep on bringing a wealth of results to the A-Life community. Even there, however, new tendencies appear, like collective robotics, and more specifically self-assembling robotics, which represent now a large sub-section. Second, new areas appear.

'Self' is a term that is much used but often poorly understood or over-hastily dismissed. In The Minimal Self R.D.V. Glasgow seeks to unearth the underlying nature of selfhood. Glasgow's approach is based upon the notion of 'intrinsic reflexivity', which manifests itself in three fundamental forms: self-maintenance, self-reproduction and self-containment. Through a conceptual analysis of selfhood, Glasgow aims to ascertain what distinguishes full forms of minimal selfhood from entities such as genes and viruses that are merely selfish or self-like. The idea is to establish the logical prerequisites for the transition from a world bereft of selfhood to one populated by selves like us. Minimal selfhood thus provides a bridge linking philosophy, biology and other disciplines that have previously failed to coincide in their understanding of what a self is.

Cognitive Science

10th International Conference, KES 2006, Bournemouth, UK, October 9-11, 2006 Proceedings

Proceedings of the Ninth International Conference on the Simulation and Synthesis of Artificial Life

Evolving Self-Organising Behaviours in Groups of Autonomous Robots

Advances in Applied Self-Organizing Systems

Novel Approaches Towards Wastewater Treatment and Resource Recovery Technologies

8th International Conference, Birmingham, UK, September 16-22, 2004, Proceedings

The Mexican International Conference on Artificial Intelligence (MICAI), a yearly international conference series organized by the Mexican Society for Artificial Intelligence (SMIA), is a major international AI forum and the main event in the academic life of the country's growing AI community. In 2008 Mexico celebrates the 50th anniversary of development of computer science in the country: in 1958 the first computer was installed at the National Autonomous University of Mexico (UNAM). Nowadays, computer science is the country's fastest growing research area. The proceedings of the previous MICAI events were published by Springer in its Lecture Notes in Artificial Intelligence (LNAI) series, vol. 1793, 2313, 2972, 3789, 4293, and 4827. Since its foundation in 2000, the conference has been growing in popularity, and improving in quality. This volume contains the papers presented at the oral session of the 7th Mexican International Conference on Artificial Intelligence, MICAI 2008, held October 27-31, 2008, in Atzapán de Zaragoza, Mexico. The conference received for evaluation 363 submissions by 1,032 authors from 43 countries (see Tables 1 and 2). This volume contains revised versions of 94 papers by 308 authors from 28 countries selected according to the results of an international reviewing process. Thus the acceptance rate was 25.9%. The book is structured into 20 thematic fields representative of the main current areas of interest for the AI community, plus a section of invited papers.

Organizations change. They grow, they adapt, they evolve. The effects of organizational change are important, varied and complex and analyzing and understanding them is vital for students, academics and researchers in all business schools. The Routledge Companion to Organizational Change offers a comprehensive and authoritative overview of the field. The volume brings together the very best contributors not only from the field of organizational change, but also from adjacent fields, such as strategy and leadership. These contributors offer fresh and challenging insights to the mainstream themes of this discipline. Surveying the state of the discipline and introducing new, cutting-edge themes, this book is a valuable reference source for students and academics in this area.

Complex systems are usually difficult to design and control. There are several particular methods for coping with complexity, but there is no general approach to build complex systems. In this book I propose a methodology to aid engineers in the design and control of complex systems. This is based on the description of systems as self-organizing. Starting from the agent metaphor, the methodology proposes a conceptual framework and a series of steps to follow to find proper mechanisms that will promote elements to find solutions by actively interacting among themselves.

This book presents the refereed proceedings of the 7th Portuguese Conference on Artificial Intelligence, EPiA'95, held in Funchal, Madeira Island, Portugal, in October 1995. The 30 revised full papers and the 15 poster presentations included were selected during a highly competitive selection process from a total of 167 submissions from all over the world. Among the topics covered are automated reasoning and theorem proving, belief revision, constraint-based reasoning, distributed artificial intelligence, genetic algorithms, machine learning, neural networks, non-monotonic reasoning, planning and case-based reasoning, qualitative reasoning, robotics and control, and theory of computation.

Evolutionary Swarm Robotics

Advanced Artificial Intelligence

Automation 2021: Recent Achievements in Automation, Robotics and Measurement Techniques

Genetic Programming Theory and Practice XVI

Biological Functions for Information and Communication Technologies

9th International Conference on Simulation of Adaptive Behavior, SAB 2006, Rome, Italy, September 25-29, 2006, Proceedings

Embodied Artificial Intelligence

This book constitutes the thoroughly refereed joint post-proceedings of the 17th and 18th annual conferences of the Japanese Society for Artificial Intelligence, JSAI 2003 and JSAI 2004, and co-located international workshops, held in Nigata, Japan in June 2003 and in Kanazawa, Japan in May/June 2004 respectively. It features a number of award winning papers as well as revised full workshop papers from these conferences.

These contributions, written by the foremost international researchers and practitioners of Genetic Programming (GP), explore the synergy between theoretical and empirical results on real-world problems, producing a comprehensive view of the state of the art in GP. Topics in this volume include: evolving developmental programs for neural networks solving multiple problems, tangled program, transfer learning and outlier detection using GP, program search for machine learning pipelines in reinforcement learning, automatic programming with GP, new variants of GP, like SignalGP, variants of lexbase selection, and symbolic regression and classification techniques. The volume includes several chapters on best practices and lessons learned from hands-on experience. Readers will discover large-scale, real-world applications of GP to a variety of problem domains via in-depth presentations of the latest and most significant results.

For students, researchers and professional scientist eager to gain insight into the emerging frontiers of Artificial Life, Chris Adami's work provides the basic underpinnings for properly understanding this interdisciplinary research area. The CD-ROM accompanying the book invites readers to actively experience artificial evolution in "real time" by using a proprietary simulation software program, AVIDA, which is contained on the CD.

The evolution of the Internet has led us to the new era of the information infrastructure. As the information systems operating on the Internet are getting larger and more complicated, it is clear that the traditional approaches based on centralized mechanisms are no longer meaningful. One typical example can be found in the recent growing interest in a P2P (peer-to-peer) computing paradigm. It is quite different from the Web-based client-server systems, which adopt essentially centralized management mechanisms. The P2P computing environment has the potential to overcome bottlenecks in Web computing paradigm, but it introduces another difficulty, a scalability problem in terms of information found, if we use a brute-force flooding mechanism. As such, conventional information systems have been designed in a centralized fashion. As the Internet is deployed on a world scale, however, the information systems have been growing, and it becomes more and more difficult to ensure fault-free operation. This has long been a fundamental research topic in the field. A complex information system is becoming more than we can manage. For these reasons, there has recently been a significant increase in interest in biologically inspired approaches to

designing future information systems that can be managed efficiently and correctly.

8th European Conference, ECAI 2005, Canterbury, UK, September 5-9, 2005, Proceedings

The Routledge Companion to Organizational Change

Theory and Inspiration

From Animals to Animats 8

Relational Methodologies and Epistemology in Economics and Management Sciences

MICAI 2008: Advances in Artificial Intelligence

Advances in Modeling Adaptive and Cognitive Systems

Originating from a Dagstuhl seminar, the collection of papers presented in this book constitutes on the one hand a representative state-of-the-art survey of embodied artificial intelligence, and on the other hand the papers identify the important research trends and directions in the field. Following an introductory overview, the 23 papers are organized into topical sections on - philosophical and conceptual issues - information, dynamics, and morphology - principles of embodiment for real-world applications - developmental approaches - artificial evolution and self-reconfiguration

The Mind and Brain are usually considered as one and the same nonlinear, complex dynamical system, in which information processing can be described with vector and tensor transformations and with attractors in multidimensional state spaces. Thus, an internal neurocognitive representation concept consists of a dynamical process which filters out statistical prototypes from the sensorial information in terms of coherent and adaptive n-dimensional vector fields. These prototypes serve as a basis for dynamic, probabilistic predictions or probabilistic hypotheses on prospective new data (see the recently introduced approach of "predictive coding" in neurophilosophy). Furthermore, the phenomenon of sensory and language cognition would thus be based on a multitude of self-regulatory complex dynamics of synchronous self-organizing mechanisms that are dynamically related together and can be integrated to a neurally based representation of this perceptual object by means of a synchronization mechanism ("feature binding"). In language processing it is shown how semantic concepts and syntactic roles can be dynamically related together or can be integrated to a neurally based systematic and compositional connectionist representations by means of a synchronization mechanism ("variable binding") solving the Fodor-Pyllyshyn-Challenge. Since the systemtheoretical connectionism has succeeded in modeling the sensory objects in perception as well as systematic and compositional representations in language processing with this vector- and oscillation-based representation format, a new, convincing theory of neurocognition has been developed, which bridges the neuronal and the cognitive analysis level. The book describes how elementary neuronal information is combined in perception and language, so it becomes clear how the brain processes this information to enable basic cognitive performance of the humans.

This book contains 38 papers authored by both scientists and practitioners focused on an interdisciplinary approach to the development of cyber-physical systems. Recently our civilization has been facing one of the most severe challenges in modern history. The COVID-19 pandemic devastated the global economy and significantly disrupted numerous areas of economic activity. Only radical increase of efficiency and versatility of industrial production, with further limitation of human involvement, paralleled by the decrease of environmental burden, will enable us to cope with such challenges. We hope that the presented book provides input to the solution of at least some problems brought about by this challenge. This approach relies on the development of measuring techniques, robotic and mechatronic systems, industrial automation, numerical modeling and simulation as well as application of artificial intelligence techniques required by the transformation leading to Industry 4.0.

By incorporating biologically-inspired functions into ICT, various types of new-generation information and communication systems can be created. Just some example of areas already benefiting from such design inspiration are network architectures, information processing, molecular communication, and complex network modeling for solving real-world-problems. This book provides the theoretical basis for understanding these developments and explains their practical applications. Highlighted inserts appears throughout to help readers to understand the very latest topics in these emerging research fields. The book ends with a more philosophical discussion on how new ICT solutions can be found by looking at analogous systems in biology. This new way of thinking may help researchers and practitioners to apply innovative ideas in developing next-generation technologies.

Genetic and Evolutionary Computation Conference Seattle, WA, USA, June 26-30, 2004, Proceedings, Part I

The Minimal Self

JSAI 2003 and JSAI 2004 Conferences and Workshops, Nigata, Japan, June 23-27, 2003, Kanazawa, Japan, May 31-June 4, 2004, Revised Selected Papers

Organizational Development and Change Theory

Unifying Themes in Complex Systems VII

Design and Control of Self-organizing Systems

In this book the use of ER techniques for the design of self-organising group behaviours, for both simulated and real robots is introduced. The book tries to mediate between two apparently opposed perspectives: engineering and cognitive science. The experiments presented in the book and the results obtained contribute to the assessment of ER not only as a design tool, but also as a methodology for understanding intelligent adaptive behaviours.

New research on the adaptive behavior of natural and synthetic agents. The biannual International Conference on the Simulation of Adaptive Behavior brings together researchers from ethology, psychology, ecology, artificial intelligence, artificial life, robotics, engineering, and related fields to advance the understanding of behaviors and underlying mechanisms that allow natural and synthetic agents (animals) to adapt and survive in uncertain environments. The work presented focuses on well-defined models—robotic, computer simulation, and mathematical—that help to characterize and compare various organizational principles or architectures underlying adaptive behavior in both animals and animats. The proceedings of the eighth conference treat such topics as passive and active perception, navigation and mapping, collective and social behavior, and applied adaptive behavior.

This book constitutes the refereed proceedings of the 9th International Conference on Simulation of Adaptive Behavior, SAB 2006. The 35 revised full papers and 35 revised poster papers presented are organized in topical sections on the animat approach to adaptive behaviour, perception and motor control, action selection and behavioral sequences, navigation and internal world models, learning and adaptation, evolution, collective and social behaviors, applied adaptive behavior and more.

The social sciences, especially economics, management, and organizational science, are experiencing a tremendous renewed interest for their epistemological and methodological statutes, as witnessed by the many books and specialized journals established during the last two decades. Relational Methodologies and Epistemology in the Economics and Management Sciences identifies and presents the four main network-based methodologies including network analysis, Boolean network simulation modeling, artificial neural network simulation modeling, and agent-based simulation modeling in addition to their conceptual-epistemological implications and concrete applications within the social and natural sciences. Featuring a critical assessment of relational methodologies and their practical applications, this timely publication is ideal for use by corporate R&D departments, researchers, theorists, and graduate-level students.

10th European Conference, ECAI 2009, Budapest, Hungary, September 13-16, 2009, Revised Selected Papers, Part I

The Oxford Handbook of Algorithmic Music

Biologically Inspired Approaches to Advanced Information Technology

Proceedings of the Seventh (i.e., Eighth) International Conference on Simulation of Adaptive Behavior

5th International Conference, ICARIS 2006, Oeiras, Portugal, September 4-6, 2006, Proceedings

From Animals to Animats 9

Genetic and Evolutionary Computation – GECCO 2004

The International Conference on Complex Systems (ICCS) creates a unique atmosphere for scientists of all fields, engineers, physicians, executives, and a host of other professionals to explore common themes and applications of complex system science. With this new volume, Unifying Themes in Complex Systems continues to build common ground between the wide-ranging domains of complex system science.

How do we design a self-organizing system? Is it possible to validate and control non-deterministic dynamics? What is the right balance between the emergent patterns that bring robustness, adaptability and scalability, and the traditional need for verification and validation of the outcomes? The last several decades have seen much progress from original ideas of "emergent functionality" and "design for emergence", to sophisticated mathematical formalisms of "guided self-organization". And yet the main challenge remains, attracting the best scientific and engineering expertise to this elusive problem. This book presents state-of-the-practice of successfully engineered self-organizing systems, and examines ways to balance design and self-organization in the context of applications. As demonstrated in this second edition of Advances in Applied Self-Organizing Systems, finding this balance helps to deal with practical challenges as diverse as navigation of microscopic robots within blood vessels, self-monitoring aerospace vehicles, collective and modular robotics adapted for autonomous reconnaissance and surveillance, self-managing grids and multiprocessor scheduling, data visualization and self-modifying digital and analog circuitry, intrusion detection in computer networks, reconstruction of hydro-physical fields, traffic management, immunocomputing and nature-inspired computation. Many algorithms proposed and discussed in this volume are biologically inspired, and the reader will also gain an insight into cellular automata, genetic algorithms, artificial immune systems, snake-like locomotion, ant foraging, birds flocking, neuromorphic circuits, amongst others. Demonstrating the practical relevance and applicability of self-organization, Advances in Applied Self-Organizing Systems will be an invaluable tool for advanced students and researchers in a wide range of fields.

Featuring chapters by emerging and established scholars as well as by leading practitioners in the field, this Handbook both describes the state of algorithmic composition and also set the agenda for critical research on and analysis of algorithmic music.

The two volume set LNCS 3102/3103 constitutes the refereed proceedings of the Genetic and Evolutionary Computation Conference, GECCO 2004, held in Seattle, WA, USA, in June 2004. The 230 revised full papers and 104 poster papers presented were carefully reviewed and selected from 460 submissions. The papers are organized in topical sections on artificial life, adaptive behavior, agents, and ant colony optimization; artificial immune systems, biological applications; coevolution; evolutionary robotics; evolution strategies and evolutionary programming; evolvable hardware; genetic algorithms; genetic programming; learning classifier systems; real world applications; and search-based software engineering.

New Frontiers in Artificial Intelligence

Swarm Intelligence

The Logic of Artificial Life

Abstracting and Synthesizing the Principles of Living Systems : Proceedings of the 7th German Workshop on Artificial Life, July 26-28, 2006, Jena, Germany

Managing Fractal Organizing Processes

Parallel Problem Solving from Nature - PPSN VIII

Introduction to Artificial Life

The book contains the Proceedings of the 2010 Conference of the Italian Systems Society. Papers deal with the interdisciplinary study of processes of changing related to a wide variety of specific disciplinary aspects. Classical attempts to deal with them, based on generalising approaches used to study the movement of bodies and environmental influence, have included ineffective reductionistic simplifications. Indeed changing also relates, for instance, to processes of acquisition and varying properties such as for software; growing and aging biological systems; learning/cognitive systems; and socio-economic systems growing and developing through innovations. Some approaches to modelling such processes are based on considering changes in structure, e.g., phase-transitions. Other approaches are based on considering (1) periodic changes in structure as for processes of self-organisation; (2) non-periodic but coherent changes in structure, as for processes of emergence; (3) the quantum level of description. Papers in the book study the problem considering its transdisciplinary nature, i.e., systemic properties studied per se and not within specific disciplinary contexts. The aim of these studies is to outline a transdisciplinary theory of change in systemic properties. Such a theory should have simultaneous, corresponding and eventually hierarchical disciplinary aspects as expected for a general theory of emergence. Within this transdisciplinary context, specific disciplinary research activities and results are assumed to be mutually represented as within a philosophical and conceptual framework based on the theoretical centrality of the observer and conceptual non-separability of context and observer, related to logically open systems and Quantum Entanglement. Contributions deal with such issues in interdisciplinary ways considering theoretical aspects and applications from Physics, Cognitive Science, Biology, Artificial Intelligence, Economics, Architecture, Philosophy, Music and Social Systems. Sample Chapter(s) Approaches to the Origin of Life on Earth (178 KB) Contents:Self-Organization, Chaos, Complexity, Collective Behavior Theories of Change, Learning as a Process of Changing and Induction of Systems Thinking Change in Artificial Vision Processes of Change in Economics and Management. Theories and Applications Architecture and Design as the Design of Contexts for Inducing Processes of Change in Social Systems Theories of Change in Cognitive Science Change in Social Systems Readership: Graduate students, researchers, academics in nonlinear science, modeling, simulations, and computations. Keywords: Change, Complexity, Computation, Emergence, Model, Property, Simulation, Theory Key Features: Deals with complexity from different disciplinary problems in a unified way Present an interdisciplinary overview on disciplinary nonlinear issues Introduces updated approaches to deal with complexity

This book constitutes the refereed proceedings of the 7th European Conference on Artificial Life, ECAI 2003, held in Dortmund, Germany in September 2003. The 96 revised full papers presented were carefully reviewed and selected from more than 140 submissions. The papers are organized in topical sections on artificial chemistries, self-organization, and self-replication; artificial societies; cellular and neural systems; evolution and development; evolutionary and adaptive dynamics; languages and communication; methodologies and applications; and robotics and autonomous agents.

This volume contains 71 revised refereed papers, including seven invited surveys, presented during the Third European Conference on Artificial Life, ECAI '95, held in Granada, Spain in June 1995. Originally AL was concerned with applying biologically inspired solutions to technology and with examining computational expertise in order to reproduce and understand life processes. Despite its short history, AL now is becoming a mature scientific field. The volume reports the state of the art in this exciting area of research; there are sections on foundations and epistemology, origins of life and evolution, adaptive and cognitive systems, artificial worlds, robotics and emulation of animal behavior, societies and collective behavior, biocomputing, and applications and common tools.

Dear delegates, friends and members of the growing KES professional community, welcome to the proceedings of the 9th International Conference on Knowledge-Based and Intelligent Information and Engineering Systems hosted by La Trobe University in Melbourne, Australia. The KES conference series has been established for almost a decade, and it continues each year to attract participants from all geographical areas of the world, including Europe, the Americas, Australasia and the Pacific Rim. The KES conferences cover a wide range of intelligent systems topics. The broad focus of the conference series is the theory and applications of intelligent systems. From a pure research field, intelligent systems have advanced to the point where their abilities have been incorporated into many business and engineering application areas. KES 2005 provided a valuable mechanism for delegates to obtain an extensive view of the latest research into a range of intelligent-systems algorithms, tools and techniques. The conference also gave delegates the chance to come into contact with those applying intelligent systems in diverse commercial areas. The combination of theory and practice represented a unique opportunity to gain an appreciation of the full spectrum of leading-edge intelligent-systems activity. The papers for KES 2005 were either submitted to invited sessions, chaired and organized by respected experts in their fields, or to a general session, managed by an extensive International Program Committee, or to the Intelligent Information Hiding and Multimedia Signal Processing (IHHMSP) Workshop, managed by an International Workshop Technical Committee.

Integrative Synchronization Mechanisms in Cognitive Neuroarchitectures of Modern Connectionism

Artificial Life IX

Knowledge-Based Intelligent Information and Engineering Systems

Abstracting and Synthesizing the Principles of Living Systems : Proceedings of the 8th German Workshop on Artificial Life, April 14-16, 2004, Bamberg, Germany

Proceedings of the Seventh International Conference on Complex Systems