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Collana	Lecture Notes in Artificial Intelligence ; ; 929
Disciplina	574/.01/13
Soggetti	Artificial intelligence Anthropology Life sciences Bioinformatics Computational biology Biomathematics Statistics Artificial Intelligence Life Sciences, general Computer Appl. in Life Sciences Mathematical and Computational Biology Statistics for Life Sciences, Medicine, Health Sciences
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Nota di contenuto	Artificial life and molecular evolutionary biology -- Artificial life needs a real epistemology -- Grounding and the entailment structure in robots and artificial life -- Mean field theory of the Edge of Chaos -- Escaping from the Cartesian mind-set: Heidegger and artificial life -- Semantic Closure: A guiding notion to ground artificial life -- The inside and outside views of life -- Prebiotic chemistry, artificial life, and complexity theory: What do they tell us about the origin of biological systems? -- Compartimentation in replicator models -- Evolutionary

dynamics and optimization -- Population evolution in a single peak fitness landscape how high are the clouds? -- Replicators don't! -- RNA viruses: a bridge between life and artificial life -- Complexity analysis of a self-organizing vs. a template-directed system -- Tile Automaton for evolution of metabolism -- Tracking the red queen: Measurements of adaptive progress in co-evolutionary simulations -- The coevolution of mutation rates -- Coevolution of machines and tapes -- Incremental co-evolution of organisms: A new approach for optimization and discovery of strategies -- Symbiosis and co-evolution in animats -- Artificial endosymbiosis -- Mathematical analysis of evolutionary process -- The evolution of hierarchical representations -- Adaptation and the modular design of organisms -- A theory of differentiation with dynamic clustering -- Cell differentiation and neurogenesis in evolutionary large scale chaos -- Evolving artificial neural networks that develop in time -- Contextual genetic algorithms: Evolving developmental rules -- Can development be designed? What we may learn from the Cog Project -- Emergent organization of interspecies communication in Q-learning artificial organisms -- Self and nonseld revisited: Lessons from modelling the immune network -- On formation of structures -- Learning in the active mode -- Learning subjective “cognitive maps” in the presence of sensory-motor errors -- Specialization under social conditions in shared environments -- Iterated prisoner's dilemma with choice and refusal of partners: Evolutionary results -- Abundance-distributions in artificial life and stochastic models: “age and area” revisited -- Elements of a theory of simulation -- To simulate or not to simulate: A problem of minimising functional logical depth -- Quasi-Uniform Computation-Universal cellular automata -- A new self-reproducing cellular automaton capable of construction and computation -- Self-inspection based reproduction in cellular automata -- Evaluation of learning performance of situated embodied agents -- Seeing in the dark with artificial bats -- Navigating with an adaptive light compass -- Collision avoidance using an egocentric memory of proximity -- A useful autonomous vehicle with a hierarchical behavior control -- Evolving electronic robot controllers that exploit hardware resources -- Classification as sensory-motor coordination -- High-pass filtered positive feedback for decentralized control of cooperation -- Learning and adaptivity: Enhancing reactive behaviour architectures in real-world interaction systems -- Interactivism: A functional model of representation for behavior-based systems -- Noise and the reality gap: The use of simulation in evolutionary robotics -- Essential dynamical structure in learnable autonomous robots -- Optimizing the performance of a robot society in structured environment through Genetic Algorithms -- Spatial games and evolution of cooperation -- Aggressive signaling meets adaptive receiving: Further experiments in synthetic behavioural ecology -- Modelling foraging behaviour of ant colonies -- The computationally complete ant colony: Global coordination in a system with no hierarchy -- Mimicry and coevolution of hedonic agents -- Evolution of symbolic grammar systems -- Driven cellular automata, adaptation and the binding problem -- The functional composition of living machines as a design principle for artificial organisms -- Thermodynamics of RNA folding. When is an RNA molecule in equilibrium? -- An artificial life model for predicting the tertiary structure of unknown proteins that emulates the folding process -- Energy cost evaluation of computing capabilities in biomolecular and artificial matter -- Contemporary evolution strategies -- The usefulness of recombination -- The investigation of Lamarckian Inheritance with Classifier Systems in a massively parallel simulation

	environment -- Orgy in the computer: Multi-parent reproduction in genetic algorithms -- A simplification of the theory of neural groups selection for adaptive control.
Sommario/riassunto	This volume contains 71 revised refereed papers, including seven invited surveys, presented during the Third European Conference on Artificial Life, ECAL '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.