1. Record Nr.   UNINA9910298574203321

Titolo	Evolution, complexity and artificial life / / Stefano Cagnoni, Marco Mirolli, Marco Villani, editors
Pubbl/distr/stampa	Heidelberg, Germany : , : Springer, , 2014
ISBN	3-642-37577-4
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (xvii, 280 pages) : illustrations (some color)
Collana	Gale eBooks
Disciplina	003.7 004 006.3 620
Soggetti	Self-organizing systems Evolutionary computation Artificial life
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.
Nota di contenuto	One Artefact – Many Phenomena -- Taming the Complexity of Natural and Artificial Evolutionary Dynamics -- Models of Gene Regulation: Integrating Modern Knowledge into the Random Boolean Network Framework -- Attractors Perturbations in Biological Modelling: Avalanches and Cellular Differentiation -- Automatic Design of Boolean Networks for Modeling Cell Differentiation -- Towards the Engineering of Chemical Communication Between Semi-synthetic and Natural Cells -- Cumulative Learning Through Intrinsic Reinforcements -- Development of Categorization Abilities in Evolving Embodied Agents: A Study of Internal Representa-tions with External Social Inputs -- Regulatory Traits: Cultural Influences on Cultural Evolution -- Building up Serious Games with an Artificial Life Approach: Two Case Studies -- The Effects of Multivalency and Kinetics in Nanoscale Search by Molecular Spiders -- Towards the Use of Genetic Programming for the Prediction of Survival in Cancer -- A Neuro-evolutionary Approach to Electrocardiographic Signal Classification -- Self-organisation and Evolution for Trust-Adaptive Grid Computing Agents -- Honest vs. Cheating Bots in PATROL-Based Real-Time Strategy MMOGs --

Distribution Search on Evolutionary Many-Objective Optimization: Selection Mappings and Recombination Rate -- Concurrent Implementation Techniques Using Differential Evolution for Multi-core CPUs: A Comparative Study Using Statistical Tests.

| Sommario/riassunto | Traditionally, artificial evolution, complex systems, and artificial life were separate fields, with their own research communities, but we are now seeing increased engagement and hybridization. Evolution and complexity characterize biological life but they also permeate artificial life, through direct modeling of biological processes and the creation of populations of interacting entities from which complex behaviors can emerge and evolve. This latter consideration also indicates the breadth of the related topics of interest, and of the different study viewpoints, ranging from purely scientific and exploratory approaches aimed at verifying biological theories to technology-focused applied research aimed at solving difficult real-world problems. This edited book is structured into sections on research issues, biological modeling, mind and society, applications, and evolution. The contributing authors are among the leading scientists in these fields, and their chapters describe interesting ideas and results in topics such as artefacts, evolutionary dynamics, gene regulatory networks, biological modeling, cell differentiation, chemical communication, cumulative learning, embodied agents, cultural evolution, an a-life approach to games, nanoscale search by molecular spiders, using genetic programming for disease survival prediction, a neuroevolutionary approach to electrocardiography, trust-adaptive grid computing, detecting cheating bots in online games, distribution search in evolutionary multiobjective optimization, and differential evolution implemented on multicore CPUs. The book will be of interest to researchers in the fields of artificial intelligence, artificial life, and computational intelligence. |