

2007 IEEE Symposium on Artificial Life

**Honolulu, HI
1-5 April 2007**



IEEE Catalog Number:
ISBN:

07EX1567
1-4244-0701-X

IEEE Symposium on Artificial Life (CI-ALife'07)

Sensitivity of Self-Organized Speciation to Long-Distance Dispersal.....	1
Joshua Payne, Margaret Eppstein and Charles Goodnight	
Repeated Occurrences of the Baldwin Effect Can Guide Evolution on Rugged Fitness Landscapes	8
Reiji Suzuki and Takaya Arita	
Studying Long-term Evolution with Artificial Life	15
Antonio Lafusa	
Towards a Framework for Observing Artificial Life Forms.....	23
Janardan Misra and Martin Henz	
Evolution of Tool Use Behavior	31
Boris Schaefer, Nicklas Bergfeldt, Maria Jose Riveiro Carballa and Tom Ziemke	
Predicting Fitness Effects of Beneficial Mutations in Digital Organisms.....	39
Haitao Zhang and Michael Travisano	
Evolving an Artificial Regulatory Network for 2D Cell Patterning.....	47
Arturo Chavoya and Yves Duthen	
A Uniform Framework of Molecular Interaction for an Artificial Chemistry with Compartments.....	54
Tooru Watanabe, Kazumasa Koizumi, Kishi Koji, Nakamura Masaki and Kobayashi Keiji	
Exploring Logic Artificial Chemistries: An Illogical Attempt?	61
Christof Teuscher	
The Essential Motif That Wasn't There: Topological and Lesioning Analysis of Evolved Genetic Regulatory Networks	69
Johannes F. Knabe, Chrystopher L. Nehaniv and Maria J. Schilstra	
Epistasis in Multi-Objective Evolutionary Recurrent Neuro-Controllers	77
Mario Ventresca and Beatrice Ombuki-Berman	
Research on Structure Learning of Dynamic Bayesian Networks by Particle Swarm Optimization	85
Heng Xing-Chen, Qin Zheng, Tian Lei and Shao Li-Ping	
Artificial Immune System for Solving Constrained Global Optimization Problems	92
Jui-Yu Wu	
An Evolutionary Model of Brand Competition.....	100
Abhijit Sengupta, Danica Vukadinovic Greetham and Michael Spence	
Using Artificial Organisms To Study The Evolution of Backbones in Fish	108
Chun Wai Liew, Robert G Root, John H Long Jr., Thomas J Koob and Megan Cummins	
Reproducer Classification Using the Theory of Affordances	115
Matt Webster and Grant Malcolm	

Artificial life, natural rationality and probability matching	123
Benoit Hardy-Vallee	
Sexyloop: Self-Reproduction, Evolution, and Sex in Cellular Automata	130
Nicolas Oros and Chrystopher L. Nehaniv	
The Species Problem in Artificial Life	139
George Kampis, Laszlo Gulyas and Sandor Soos	
Sensory-motor Coordination in Object Detection	147
Guido de Croon and Eric Postma	
The Gridbrain: an Heterogeneous Network for Open Evolution in 3D Environments	155
Telmo Menezes and Ernesto Costa	
The Benefits of Boredom: an Exploration in Developmental Robotics	163
Scott Bolland and Shervin Emami	
Formation of spatial representations in evolving autonomous robots	171
Onofrio Gigliotta and Stefano Nolfi	
Co-option and Irreducibility in Regulatory Networks for Cellular Pattern Development	179
Ranjitha Dhanasekaran, Gregory Podgorski and Nicholas Flann	
Is there a Liquid State Machine in the Bacterium Escherichia Coli?	187
Ben Jones, Chrisantha Fernando, Dov Stekel and Jon Rowe	
Understanding and Harnessing Self-Organization	192
Cristina Santini and Andy Tyrrell	
Minimal Communication Strategies for Self-Organising Synchronisation Behaviours	199
Vito Trianni and Stefano Nolfi	
Maximization of Potential Information Flow as a Universal Utility for Collective Behaviour	207
Philippe Capdepuy, Daniel Polani and Chrystopher Nehaniv	
Generative Network Automata: A Generalized Framework for Modeling Complex Dynamical Systems with Autonomously Varying Topologies	214
Hiroki Sayama	
The Core: Evolving Autonomous Agent Control	222
Matt Parker and Gary Parker	
Evolving A Better Adversary: A Case Study in a German Castle	229
Daniel McFarlin and Peter Todd	
Cooperation Achieved by Migration and Evolution in a Multilevel Selection Context	236
Genki Ichinose and Takaya Arita	
A New Step for Artificial Creatures	243
Nicolas Lassabe, Hervé Luga and Yves Duthen	
Basic Technologies for Knowledge Transfer in Intelligent Systems	251
Oliver Buchtala and Bernhard Sick	

The Extended Concept-based Multi-objective Path Planning and its A-life implications.....	259
Amiram Moshaiov and Gideon Avigad	
PAPER WITHDRAWN	266
HIFF-II: A Hierarchically Decomposable Problem with Inter-level Interdependency	274
Susan Khor	
The Structure of False Social Beliefs.....	282
M. Afzal Upal	
Flocking of Multi-Agent Systems with a Virtual Leader	287
Hong Shi, Long Wang, Tianguang Chu and Feng Fu	
Social, Physical, and Computational Tradeoffs in Collaborative Multi-agent Territory Exploration Tasks.....	295
Paul Schermerhorn and Matthias Scheutz	
An Evolving Ecosystems Approach to Generating Complex Agent Behaviour.....	303
Peter-Paul Pichler and Lola Canamero	
Pattern Formation in Homogeneous and Heterogeneous Swarms: Differences Between Versatile and Specialized Agents	311
Sven Magg and Rene te Boekhorst	
A Critical Reappraisal of the Dynamical Approach to Cognition	317
Simon McGregor, Nathaniel Virgo and James Dyke	
Scaffolding Language Emergence Using the Autotelic Principle	325
Luc Steels and Pieter Wellens	
Social Learning and Cultural Evolution in Embodied and Situated Agents	333
Alberto Acerbi and Stefano Nolfi	
Exploring the Design Space of Robot Appearance and Behavior in an Attention-Seeking 'Living Room' Scenario for a Robot Companion	341
Michael L. Walters, Kerstin Dautenhahn, Rene te Boekhorst, Kheng Lee Koay and Sarah N Woods	
Cooperation of Multiple Fish-like Microrobots Based on Reinforcement Learning	348
Jinyan Shao and Long Wang	
Experiments on Fault-Tolerant Self-Reconfiguration and Emergent Self-Repair.....	355
David Christensen	
Representations of Streetscape Perceptions Through Manifold Learning in the Space of Hough Arrays.....	362
Stephan K. Chalup, Riley Clement, Joshua Marshall, Chris Tucker and Michael J. Ostwald	
Sensorless but not Senseless: Prediction in Evolutionary Car Racing.....	370
Hugo Marques, Julian Togelius, Magdalena Kogutowska, Owen Holland and Simon M. Lucas	

New Conservation Functions and a Partial Taxonomy for 1-D Cellular Automata	378
Barry Fagin and Leemon Baird	
An Unbounded Parallel Binary Tree Adder for use on a Cellular Platform	386
James Weston and Peter Lee	
Hebbian Learning using Fixed Weight Evolved Dynamical 'Neural' Networks	394
Eduardo Izquierdo-Torres and Inman Harvey	
The Emergence of Social Consensus in Boolean Networks.....	402
David Green,, Tania Leishman and Suzanne Sadedin	
Rethinking the Adaptive Capability of Accretive Evolution on Hierarchically Consistent Problems	409
Susan Khor	
Evolutionary Design of Specialization	417
A. E. Eiben, G. S. Nitschke and M. C. Schut	
The Evolution of Structural Design Through Artificial Embryogeny	425
Taras Kowaliw, Peter Grogono and Nawwaf Kharma	
Speciation through Exaptation	433
Lee Graham and Franz Oppacher	
Adaptive Power System Stabilizers Using Artificial Immune System	440
Mani Hunjan and Ganesh Venayagamoorthy	
Control-theoretic Synthesis of Hierarchical Dynamics for Embodied Cognition in Autonomous Robots.....	448
Nebu John Mathai and Takis Zourntos	
Biasing XCS with Domain Knowledge for Planning Flight Trajectories in a Moving Sector Free Flight Environment	456
Kuang-Yuan Chen, Hai Huong Dam, Peter Lindsay and Hussein Abbass	
Agent-Based Modelling of House Price Evolution	463
Terry Bossomaier, Siti Amri and James Thompson	
Collective intelligence for decision support in very large stakeholder networks: The future US energy system.....	468
Steen Rasmussen, Diana Mangalagiu, Hans Ziock1, Johan Bollen, and Gordon Keating	