

Table of Contents

Tom Thumb Algorithm and von Neumann Universal Constructor	1
<i>Joël Rossier, Enrico Petraglio, André Stauffer, Gianluca Tempesti</i>	
Elementary Probabilistic Cellular Automata with Memory in Cells	11
<i>Ramón Alonso-Sanz, Margarita Martín</i>	
Universal Construction on Self-Timed Cellular Automata	21
<i>Yousuke Takada, Teijiro Isokawa, Ferdinand Peper, Nobuyuki Matsui</i>	
Computing Phase Shifts of Maximum-Length 90/150 Cellular Automata Sequences	31
<i>Sung-Jin Cho, Un-Sook Choi, Yoon-Hee Hwang, Han-Doo Kim, Yong-Soo Pyo, Kwang-Seok Kim, Seong-Hun Heo</i>	
Cellular Automata Evolution for Distributed Data Mining	40
<i>Pradipta Maji, Biplab K. Sikdar, P. Pal Chaudhuri</i>	
A Comparative Study of Optimum-Time Synchronization Algorithms for One-Dimensional Cellular Automata – A Survey	50
<i>Hiroshi Umeo, Masaya Hisaoka, Takashi Sogabe</i>	
A Cellular Automaton Model for an Immune-Derived Search Algorithm	61
<i>Niloy Ganguly, Andreas Deutsch</i>	
Randomized Computation with Cellular Automata	71
<i>Bastien Chopard, Marco Tomassini</i>	
Applying Cell-DEVS in 3D Free-Form Shape Modeling	81
<i>Pengfei Wu, Xiuping Wu, Gabriel Wainer</i>	
Universality of Hexagonal Asynchronous Totalistic Cellular Automata . . .	91
<i>Susumu Adachi, Ferdinand Peper, Jia Lee</i>	
Efficient Simulation of CA with Few Activities	101
<i>Richard Walter, Thomas Worsch</i>	
Perturbing the Topology of the Game of Life Increases Its Robustness to Asynchrony	111
<i>Nazim Fatès, Michel Morvan</i>	
Local Information in One-Dimensional Cellular Automata	121
<i>Torbjorn Helvik, Kristian Lindgren, Mats G. Nordahl</i>	

Diffusion Controlled Cellular Automaton Performing Mesh Partitioning	131
<i>Jiří Kroc</i>	
Cellular Automata with Majority Rule on Evolving Network	141
<i>Danuta Makowiec</i>	
Searching for Pattern-Forming Asynchronous Cellular Automata – An Evolutionary Approach	151
<i>Tomoaki Suzudo</i>	
Heredity, Complexity, and Surprise: Embedded Self-Replication and Evolution in CA	161
<i>Chris Salzberg, Hiroki Sayama</i>	
Unlearning Phenomena in Co-evolution of Non-uniform Cellular Automata	172
<i>Boaz Leskes, Peter M.A. Sloot</i>	
Evolving Transition Rules for Multi Dimensional Cellular Automata	182
<i>Ron Breukelaar, Thomas Bäck</i>	
Traffic of Ants on a Trail: A Stochastic Modelling and Zero Range Process	192
<i>Katsuhiro Nishinari, Andreas Schadschneider, Debashish Chowdhury</i>	
Cellular Automata and Roundabout Traffic Simulation	202
<i>Enrico G. Campari, Giuseppe Levi, Vittorio Maniezzo</i>	
Acquisition of Local Neighbor Rules in the Simulation of Pedestrian Flow by Cellular Automata	211
<i>Katsutoshi Narimatsu, Toshihiko Shiraishi, Shin Morishita</i>	
Two-Phase Automaton for Porous Structure and Combustion Simulation	220
<i>Kazuhiro Yamamoto</i>	
Approximation of Continuous Media Models for Granular Systems Using Cellular Automata	230
<i>Marta Pla-Castells, I. García, R.J. Martínez</i>	
A Topological Framework for the Specification and the Simulation of Discrete Dynamical Systems	238
<i>Antoine Spicher, Olivier Michel, Jean-Louis Giavitto</i>	
A Basic Qualitative CA Based Model of a Frustrated Linear Josephson Junction Array (JJA)	248
<i>Claudia R. Calidonna, Adele Naddeo</i>	

Cellular Automata Based Encompression Technology for Voice Data	258
<i>Chandrama Shaw, Pradipta Maji, Sourav Saha, Biplab K. Sikdar, S. Roy, P. Pal Chaudhuri</i>	
A MCA Motion-Planner for Mobile Robots with Generic Shapes and Kinematics on Variable Terrains	268
<i>Fabio M. Marchese</i>	
Simulation of the Dynamics of Pulsed Pumped Lasers Based on Cellular Automata	278
<i>J.L. Guisado, F. Jiménez-Morales, J.M. Guerra</i>	
Surface Roughening in Homoepitaxial Growth: A Lattice Gas Cellular Automaton Model	286
<i>A. Gerisch, A.T. Lawniczak, R.A. Budiman, H. Fukś, H.E. Ruda</i>	
Ant Colony System for JSP	296
<i>Urszula Boryczka</i>	
Using de Bruijn Diagrams to Analyze 1d Cellular Automata Traffic Models	306
<i>René Rodríguez Zamora, Sergio Víctor Chapa Vergara</i>	
Using Cellular Automata to Determine Bounds for Measuring the Efficiency of Broadcast Algorithms in Highly Mobile Ad Hoc Networks	316
<i>Michael Kirkpatrick, Frances Van Scoy</i>	
From Individual to Collective Behaviour in CA Like Models of Data Communication Networks	325
<i>A.T. Lawniczak, K.P. Maxie, A. Gerisch</i>	
Agent-Driven Resource Optimization in User Networks: A Game Theoretical Approach	335
<i>J.C. Burguillo-Rial, F.J. González-Castaño, E. Costa-Montenegro, J. Vales-Alonso</i>	
Lattice Boltzmann Modeling of Injection Moulding Process	345
<i>Jonas Latt, Guy Courbebaisse, Bastien Chopard, Jean Luc Falcone</i>	
Cellular Automata Diffusion-Kinetic Model of Dendritic Growth	355
<i>Andriy Burbelko, Edward Frasz, Wojciech Kapturkiewicz, Ewa Olejnik</i>	

Cellular Automata with Rare Events; Resolution
of an Outstanding Problem in the Bootstrap Percolation Model 365
*Paolo De Gregorio, Aonghus Lawlor, Phil Bradley,
Kenneth A. Dawson*

Plastic Deformation Development in Polycrystals Based
on the Cellular Automata and Relaxation Element Method 375
G.V. Lasko, Y.Y. Deryugin, S. Schmauder

Predicting Wildfire Spreading
Through a Hexagonal Cellular Automata Model 385
Giuseppe A. Trunfio

Modelling Wildfire Dynamics via Interacting Automata 395
Adam Dunn, George Milne

Sympatric Speciation Through Assortative Mating
in a Long-Range Cellular Automaton 405
Franco Bagnoli, Carlo Guardiani

A Cellular “Blocks” Model for Large Surface Flows
and Applications to Lava Flows 415
Maria Vittoria Avolio, Salvatore Di Gregorio

Cell-Oriented Modeling of *In Vitro* Capillary Development 425
Roeland M.H. Merks, Stuart A. Newman, James A. Glazier

Neuropercolation: A Random Cellular Automata Approach
to Spatio-temporal Neurodynamics 435
*Robert Kozma, Marko Puljic, Paul Balister, Bela Bollobas,
Walter J. Freeman*

The Use of Hybrid Cellular Automaton Models
for Improving Cancer Therapy 444
B. Ribba, T. Alarcón, K. Marron, P.K. Maini, Z. Agur

A Stochastic Model of the Effector T Cell Lifecycle 454
John Burns, Heather J. Ruskin

A Cellular Automata Model of Population Infected
by Periodic Plague 464
Witold Dzwiniel

Mining Ecological Data with Cellular Automata 474
Alexander Campbell, Binh Pham, Yu-Chu Tian

Reconstructing Forest Savanna Dynamics in Africa
Using a Cellular Automata Model, FORSAT 484
Charly Favier, Marc A. Dubois

Learning What to Eat: Studying Inter-relations Between Learning, Grouping, and Environmental Conditions in an Artificial World	492
<i>Daniel J. van der Post, Paulien Hogeweg</i>	
Cellular Automata in Ecological and Ecohydraulics Modelling	502
<i>Arthur Mynett, Qiuwen Chen</i>	
Chaos in a Simple Cellular Automaton Model of a Uniform Society	513
<i>Franco Bagnoli, Fabio Franci, Raúl Rechtman</i>	
Replication of Spatio-temporal Land Use Patterns at Three Levels of Aggregation by an Urban Cellular Automata	523
<i>Charles Dietzel, Keith C. Clarke</i>	
Perturbation in Genetic Regulatory Networks: Simulation and Experiments	533
<i>A. Semeria, M. Villani, R. Serra, S.A. Kauffman</i>	
A Hybrid Discrete-Continuum Model for 3-D Skeletogenesis of the Vertebrate Limb	543
<i>R. Chaturvedi, C. Huang, J.A. Izaguirre, S.A. Newman, J.A. Glazier, M. Alber</i>	
A Cellular Automata Model of Early T Cell Recognition	553
<i>Arancha Casal, Cenk Sumen, Tim Reddy, Mark Alber, Peter P. Lee</i>	
Simulation of Cell Population Dynamics Using 3-D Cellular Automata	561
<i>Belgacem Ben Youssef</i>	
Synchronization of Protein Motors Modeled by Asynchronous Cellular Automata	571
<i>Ferdinand Peper, Kazuhiro Oiwa, Susumu Adachi, Chikako Shingyoji, Jia Lee</i>	
Hybrid Techniques for Pedestrian Simulations	581
<i>Christian Gloor, Pascal Stucki, Kai Nagel</i>	
A CA Approach to Study Complex Dynamics in Asset Markets	591
<i>Stefania Bandini, Sara Manzoni, Ahmad Naimzada, Giulio Pavesi</i>	
Modeling the Effect of Leadership on Crowd Flow Dynamics	601
<i>François Aubé, Robert Shield</i>	
Cellular Automata Application to the Linearization of Stream Cipher Generators	612
<i>Amparo Fúster-Sabater, Dolores de la Guía-Martínez</i>	

XIV Table of Contents

Agents in Housing Market. A Model for Siena Historical Centre	622
<i>Francesco Lapiana, Giuliano Bianchi, Giovanni Rabino</i>	
On the Omni-directional Emergence of Form in Computation	632
<i>J.F. Nystrom</i>	
A Flexible Automata Model for Disease Simulation	642
<i>Shih Ching Fu, George Milne</i>	
A Novel Artificial Life Ecosystem Environment Model	650
<i>Zhengyou Xia, Yichuan Jiang</i>	
Cellular Automata Evolution for Pattern Classification	660
<i>Pradipta Maji, Biplab K. Sikdar, P. Pal Chaudhuri</i>	
Simulation and Experimental Investigation of Two Dimensional Cracks Propagation in Ceramic Materials	670
<i>Jacek Bomba, Julita Czopor, Marek Rybaczuk</i>	
Cellular Automata in the Hyperbolic Plane: Proposal for a New Environment	678
<i>Kamel Chelghoum, Maurice Margenstern, Benoît Martin, Isabelle Pecci</i>	
Algebraic Properties of Cellular Automata: The Basis for Composition Technique	688
<i>Olga Bandman</i>	
DSCA Implementation of 3D Self-Replicating Structures	698
<i>André Stauffer, Daniel Mange, Enrico Petraglio, Fabien Vannel</i>	
Calculation of the Critical Point for Two-Layer Ising and Potts Models Using Cellular Automata	709
<i>Yazdan Asgari, Mehrdad Ghaemi, Mohammad Ghasem Mahjani</i>	
Directed Ligand Passage over the Surface of Diffusion-Controlled Enzymes: A Cellular Automata Model	719
<i>Mehrdad Ghaemi, Nasrollah Rezaei-Ghaleh, Mohammad-Nabi Sarbolouki</i>	
An Evolutionary Approach for Modelling Lava Flows Through Cellular Automata	725
<i>William Spataro, Donato D'Ambrosio, Rocco Rongo, Giuseppe A. Trunfio</i>	
CAME&L - Cellular Automata Modeling Environment & Library	735
<i>Lev Naumov</i>	
SAT-Based Analysis of Cellular Automata	745
<i>Massimo D'Antonio, Giorgio Delzanno</i>	

The Kernel Hopfield Memory Network	755
<i>Cristina García, José Ali Moreno</i>	
Timescale Separated Pollination-Colonisation Models	765
<i>J.A. Stewart-Cox, N.F. Britton, M. Mogie</i>	
Characterization of a Class of Complemented Group Cellular Automata	775
<i>Debdeep Mukhopadhyay, Dipanwita Roy Chowdhury</i>	
Block Encryption Using Reversible Cellular Automata	785
<i>Marcin Seredynski, Pascal Bouwry</i>	
Cellular Model of Complex Porous Media Application to Permeability Determination	793
<i>André Chambarel, Hervé Bolvin, Evelyne Ferry</i>	
Improved Cell-DEVS Model Definition in CD++	803
<i>Alejandro López, Gabriel Wainer</i>	
Characterization of Reachable/Nonreachable Cellular Automata States	813
<i>Sukanta Das, Biplab K. Sikdar, P. Pal Chaudhuri</i>	
Building Classifier Cellular Automata	823
<i>Peter Kokol, Petra Povalej, Mitja Lenic, Gregor Štiglic</i>	
On Evolutionary 3-Person Prisoner's Dilemma Games on 2-D Lattice	831
<i>László Gulyás, Tadeusz Płatkowski</i>	
Optimizing the Behavior of a Moving Creature in Software and in Hardware	841
<i>Mathias Halbach, Wolfgang Heenes, Rolf Hoffmann, Jan Tisje</i>	
A Generalized Rapid Development Environment for Cellular Automata Based Simulations	851
<i>Ivan Blecic, Arnaldo Cecchini, Giuseppe A. Trunfio</i>	
Characterizing Configuration Spaces of Simple Threshold Cellular Automata	861
<i>Predrag T. Tasic, Gul A. Agha</i>	
Lattice Boltzmann Approach to Incompressible Fluidynamics Dimensional Investigation and Poiseuille Test	871
<i>Gianpiero Cattaneo, Alberto Dennunzio, Fabio Farina</i>	
Author Index	881