

Bibliografia

- [1] D. Ackley and M. Littman. Interaction between learning and evolution. In C.G. Langton, C. Taylor, J.D. Farmer, and S. Rasmussen, editors, *Artificial Life II*. Addison-Wesley, 1992.
- [2] E. Alba and M. Tomassini. Parallelism and evolutionary algorithms. *IEEE Transactions on Evolutionary Computation*, 6:443–462, 2002.
- [3] J. Alcaraz and C. Maroto. A robust genetic algorithm for resource allocation in project scheduling. *Annals of Operation Research*, 102:83–109, 2001.
- [4] A. Armanini. On the dynamic impact of debris flows. In A. Armanini and F. Michiue, editors, *Recent development on debris*, volume 64 of *LNES*, pages 208–226. Springer Verlag, Berlin, 1997.
- [5] A. Armanini and L. Fraccarollo. Critical conditions for debris flows. In C.I. Chen, editor, *Debris-flow hazard mitigation: mechanics, prediction, and assessment*, pages 434–443, 1997.
- [6] D. Ashlock, M. Smucker, E.A. Stanley, and L. Tesfatsion. Preferential partner selection in an evolutionary study of prisoner’s dilemma. *BioSystems*, 37:99–125, 1996.
- [7] M.V. Avolio, D. D’Ambrosio, S. DiGregorio, R. Fata, G. Iovine, V. Lupiano, R. Rongo, and W. Spataro. A cellular automata model for different complexity landslides. In G. Nardi, editor, *Proceedings GIAST*, pages 101–114, Sansepolcro, Arezzo, Italy, 1999.
- [8] M.V. Avolio, D. D’Ambrosio, S. DiGregorio, R. Fata, R. Rongo, and W. Spataro. SCIDDICA: an incremental cellular model for landslides of increasing complexity. In *Proceedings 25th European Geophysical Society*

- General Assembly. Geophysical Research Abstracts (in CD)*, volume 2, page 146, Nice, France, April 2000.
- [9] M.V. Avolio, S. DiGregorio, F. Mantovani, A. Pasuto, R. Rongo, S. Silvano, and W. Spataro. Simulation of the 1992 Tessina landslide by a cellular automata model and future hazard scenarios. *International Journal of Applied Earth Observation and Geoinformation*, 2:41–50, 2000.
- [10] M.V. Avolio, S. DiGregorio, R. Rongo, M. Sorriso Valvo, and W. Spataro. Hexagonal cellular automata model for debris flow simulation. In A. Bucianti, G. Nardi, and R. Potenza, editors, *Proceedings International Association for Mathematical Geology Conference*, pages 920–924, Naples, 1998. Litografia Editrice.
- [11] R. Axelrod. *The evolution of cooperation*. Basic Books, New York, 1984.
- [12] R. Axelrod. The evolution of strategies in the iterated prisoner’s dilemma. In L. Davis, editor, *Genetic Algorithms and Simulated Annealing*, pages 32–41. Morgan Kaufmann Publisher, Inc., 1988.
- [13] R. Axelrod and D. Dion. The further evolution of cooperation. *Science*, 242(4884):1385–1390, 1988.
- [14] I. Azpeitia and J. Ibáñez. Spontaneous emergence of robust cellular replicators. In S. Bandini, B. Chopard, and M. Tomassini, editors, *Cellular Automata. Proceedings 5th International Conference on Cellular Automata for Research and Industry, ACRI 2002*, LNCS, pages 32–43, Geneve, Switzerland, October 2002. Spinger, Berlin.
- [15] J.E. Baker. Adaptive selections methods for genetic algorithms. In J.J. Grefenstette, editor, *Proceedings of the First Conference on Genetic Algorithms and Their Applications*. Erlbaum, 1985.
- [16] J.E. Baldwin. A new factor in evolution. *American Naturalist*, 30:441–451, 536–553, 1896.
- [17] D. Barca, G.M. Crisci, S. DiGregorio, and F.P. Nicoletta. Cellular automata for simulating lava flows: a method and examples of the etnean eruptions. *Transport Theory and Statistical Physics*, 23:195–232, 1994.

-
- [18] R.D. Beer and J.C. Gallagher. Evolving dynamical neural networks for adaptive behavior. *Adaptive Behavior*, 1:91–122, 1992.
- [19] R.K. Belew. Evolution, learning, and culture: Computational metaphores for adaptive algorithms. *Complex Systems*, 4:11–49, 1990.
- [20] E. Berlekamp, J.H. Conway, and R. Guy. *Winning for Your Mathematical Plays*. Academic Press, New York, 1982.
- [21] M. Bernaschi, S. Succi, and H. Chen. Accelerated lattice Boltzmann schemes for steady-state flow simulations. *Journal of Scientific Computing*, 16(2):135–144, 2001.
- [22] E. Bilotta, A. Lafusa, and P. Pantano. Is self-replication an embedded characteristic of artificial/living matter? In Standish, Abbass, and Bedau, editors, *Proceedings Artificial Life VIII*. MIT Press, 2002.
- [23] T. Blickle and L. Theile. A mathematical analysis of tournament selection. In L.J. Eshelman, editor, *Proceedings of the Sixth International Conference on Genetic Algorithms*, pages 9–16, Hillsdale, New Jersey, 1995. Lawrence Erlbaum Associates.
- [24] E.N. Bromhead. Pore water pressure manipulation in computerised slope stability analysis. In *Proceedings Midland Geotechnical Society Conference on Computer Applications in Geotechnical Engineering*, pages 175–184, Birmingham, 1986.
- [25] E. Cantù-Paz. *Efficient and Accurate Parallel Genetic Algorithms*. Kluwer Academic Publishers, 2000.
- [26] L. Cascini and P. Versace. Eventi pluviometrici e movimenti franosi. In *Atti del XVI Convegno Nazionale di Geotecnica*, volume 3, pages 171–184, 1986.
- [27] H. Chatè and P. Manneville. Criticality in cellular automata. *Physica D*, (45):122–135, 1990.
- [28] S. Chatterjee, C. Carrera, and L.A. Lynch. Genetic algorithms and travelling salesman problem. *European Journal of Operational Research*, 93:490–510, 1996.

-
- [29] H. Chen, S. Chen, and W.H. Matthaeus. Recovery of Navier-Stokes equations using lattice-gas Boltzmann method. *Physical Review A*, 45:5339, 5342 1992.
- [30] B. Chopard and M. Droz. *Cellular Automata Modeling of Physical Systems*. Cambridge University Press, 1998.
- [31] B. Chopard, P. Luthi, A. Masselot, and A. Dupuis. Cellular automata and lattice Boltzmann techniques: An approach to model and simulate complex systems. *Advances in Complex System*, 5(2):103–246, 2002.
- [32] B. Chopard and A. Masselot. Cellular automata and lattice Boltzmann methods: a new approach to computational fluid dynamics and particle transport. *Future Generation Computer Systems*, 16:249–257, 1999.
- [33] H.H. Chou and J.A. Reggia. Emergence of self-replicating structures in cellular automata space. *Physica D*, 110:252–276, 1997.
- [34] S. Clerici and S. Perego. Simulation of the parma river blockage by the corniglio landslide (northern italy). *Geomorphology*, 33:1–23, 2000.
- [35] E.F. Codd. *Cellular Automata*. Academic Press, New York, NY, 1968.
- [36] P. Cortez, M. Rocha, and J. Neves. A lamarckian approach for neural network training. *Neural Processing Letters*, 15:105–116, 2002.
- [37] G. Crisci, S. DiGregorio, and G.A. Ranieri. A cellular space model of basaltic lava flow. In *Proceedings International Conference on Applied Modelling and Simulation*, volume 11, pages 65–67, Paris, France, 1982.
- [38] G.M. Crisci, A. DiFrancia, S. DiGregorio, R. Rongo, and W. Spataro. An improved cellular automaton model for lava flow simulation. In S.J. Lippard, A. Næss, and R. Sinding-Larsen, editors, *Proceedings International Association for Mathematical Geology Conference*, pages 317–323, Trondheim, Norway, 1999.
- [39] G.M. Crisci, S. DiGregorio, O. Pindaro, and S.A. Ranieri. Lava flow simulation by a discrete cellular model: first implementation. *International Journal of Modelling and Simulation*, 6:137–140, 1986.

- [40] G.M. Crisci, S. DiGregorio, R. Rongo, M. Scarpelli, W. Spataro, and S. Calvari. Revisiting the 1669 Etnean eruptive crisis using a cellular automata model and implications for volcanic hazard in the Catania area. *Journal of Volcanology and Geothermal Research*, (123):211–230, 2003.
- [41] G.M. Crisci, S. DiGregorio, R. Rongo, and W. Spataro. Lava area hazard determination for the town of Nicolosi (Sicily) by cellular automata. In A. Buccianti, G. Nardi, and R. Potenza, editors, *Proceedings International Association for Mathematical Geology Conference*, pages 920–924, Naples, 1998. Litografia Editrice.
- [42] P.H. Crowley, L. Provencher, S. Sloane, L.A. Dugatkin, B. Sphon, L. Rogers, and M. Alfieri. Evolving cooperation: the role of individual recognition. *BioSystems*, 37:49–66, 1996.
- [43] J.P. Crutchfield. The calculi of emergence: Computation, dynamics, and induction. *Physica D*, 75:11–54, 1994.
- [44] J.P. Crutchfield and J.E. Hanson. Attractor vicinity decay for a cellular automaton. *CHAOS*, 3(2):215–224, 1993.
- [45] J.P. Crutchfield and M. Mitchell. The evolution of emergent computation. In *Proceedings of the National Academy of Sciences*, number 23, USA 92, November 1995.
- [46] J.P. Crutchfield, M. Mitchell, and R. Das. The evolutionary design of collective computation in cellular automata. In J.P. Crutchfield and P.K. Schuster, editors, *Evolutionary Dynamics-Exploring the Interplay of Selection, Neutrality, Accident, and Function*, New York, 2002. Oxford University Press.
- [47] D. D’Ambrosio, S. DiGregorio, S. Gabriele, and R. Gaudio. A cellular automata model for soil erosion by water. *Physics and Chemistry of the Earth – Part B*, 26(1):33–40, 2001.
- [48] D. D’Ambrosio, S. DiGregorio, S. Gabriele, and R. Gaudio. Un metodo di trasformazione di reticoli a maglia quadrata in reticoli a maglia esagonale e viceversa. Technical Report 585, CNR-IRPI - Sezione di Cosenza, Maggio 2002.

- [49] D. D'Ambrosio, S. DiGregorio, and G. Iovine. Simulating debris flows through a hexagonal cellular automata model: Sciddica S3-hex. *Natural Hazards and Earth System Sciences*, 3:545–559, 2003.
- [50] D. D'Ambrosio, S. DiGregorio, G. Iovine, V. Lupiano, L. Merenda, R. Rongo, and W. Spataro. Simulating the Curti-Sarno debris flow through cellular automata: the model SCIDDICA (release S2). *Physics and Chemistry of the Earth*, 27:1577–1585, 2002.
- [51] D. D'Ambrosio, S. DiGregorio, G. Iovine, V. Lupiano, R. Rongo, and W. Spataro. First simulations of the Sarno debris flows through cellular automata modelling. *Geomorphology*, 54:91–117, 2003.
- [52] D. D'Ambrosio, W. Spataro, and G. Iovine. Parallel genetic algorithms for optimising cellular automata models of natural complex phenomena: an application to debris-flows. *Computer & Geosciences*, submitted.
- [53] K. DeJong, D.B. Fogel, and H.P. Schwefel. A history of evolutionary computation. In T. Back, D.B. Fogel, Z. Michalewicz, and T. Baeck, editors, *Handbook of Evolutionary Computation*. IOP Publishing Ltd and Oxford University Press, 1997.
- [54] K.A. DeJong. *Analysis of Behavior of a Class of Genetic Adaptive Systems*. Phd thesis, University of Michigan, 1975.
- [55] M. DelPrete, F.M. Guadagno, and A.B. Hawkins. Preliminary report on the landslides of 5 May 1998, Campania, Southern Italy. *Bulletin of Engineering Geology and the Environment*, 57:113–129, 1998.
- [56] G.M. Crisci, A. DiFrancia, S. DiGregorio, F.P. Nicoletta, R. Rongo, and W. Spataro. SCIARA.2: a cellular automata model for lava flow simulation. In V.P. Glahn, editor, *Proceedings International Association for Mathematical Geology Conference*, pages 11–16, Barcelona, 1997. Addendum.
- [57] S. DiGregorio. L'applicazione del modello SCIARA all simulazione dell'eruzione etnea del 2002. Comunicazione personale, 2003.
- [58] S. DiGregorio, R. Rongo, C. Siciliano, M. Sorriso Valvo, and W. Spataro. Mount Ontake landslide simulation by the cellular automata model SCIDDICA-3. *Physics and Chemistry of the Earth – Part A*, 24(2):131–137, 1999.

- [59] S. DiGregorio and R. Serra. An empirical method for modelling and simulating some complex macroscopic phenomena by cellular automata. *Future Generation Computer Systems*, 16:259–271, 1999.
- [60] S. DiGregorio, R. Serra, and M. Villani. Applying cellular automata to complex environmental problems: The simulation of the bioremediation of contaminated soil. *Theoretical Computer Science*, 217:131–156, 1999.
- [61] S. DiGregorio and G. Trautteur. On reversibility in cellular automata. *Journal of Computer and System Science*, 11(3):382–391, 1975.
- [62] G. Doolen, editor. *lattice Gas Method for Partial Differential Equations*. Addison-Wesley, 1990.
- [63] G.H. Eisbacher and J.J. Clague. *Destructive mass movement in high mountains: hazard and management*, chapter Geological Survey of Canada, pages 84–16. Ottawa, Canada, 1984.
- [64] EvoRobot. Home Page: <http://gral.ip.rm.cnr.it/evorobot/simulator.html>.
- [65] D. Floreano and F. Mondada. Evolution of homing navigation in a real mobile robot. *IEEE Transactions on Systems, Man, and Cybernetics – Part B: Cybernetics*, 26(3):396–407, 1996.
- [66] L.J. Fogel, A.J. Owens, and M.J. Walsh. *Artificial Intelligence through Simulated Evolution*. Wiley, 1966.
- [67] E. Fredkin and T. Toffoli. Conservative logic. *International Journal of Theoretical Physics*, 21:219–53, 1982.
- [68] R.M. French and A. Messinger. Genes, phenes, and the baldwin effect: Learning and evolution in a simulated population. In R.A. Brooks and P. Maes, editors, *Artificial Life IV*. MIT Press, 1994.
- [69] U. Frish, D. d’Humières, and P. Lallemand. Lattice gas models for 3D hydrodynamics. *Europhysics Letters*, 291, 1987.
- [70] U. Frish, B. Hasslacher, and Y. Pomeau. Lattice gas automata for the Navier-Stokes equation. *Physical Review Letters*, 56(14):1505–1508, 1986.
- [71] M. Gardner. Mathematical games: The fantastic combinations of John Conway’s new solitaire game.

-
- [72] C. Ghezzi and D. Mandrioli. *Informatica teorica*. Clup, Milano, 1989.
- [73] D.E. Goldberg. *Genetic Algorithms in Search, Optimization and Machine Learning*. Addison-Wesley, 1989.
- [74] D.E. Goldberg. A note on Boltzmann tournament selection for genetic algorithms and population-oriented simulated annealing. *Complex Systems*, 4:445–460, 1990.
- [75] T. Gomi and K. Ide. Emergence of gaits of a legged robot by collaboration through evolution. In P.K. Simpson, editor, *IEEE World Congress on Computational Intelligence (WCCI'98)*. IEEE Press., 1998.
- [76] W. Gropp, E. Lusk, and A. Skjellum. *Using MPI: Portable Parallel Programming with the Message Passing Interface (Scientific and Engineering Computation)*. MIT Press, Cambridge, Massachusetts, 2nd edition, 1999.
- [77] H.A. Gutowitz. A hierarchical classification of cellular automata. *Physica D*, (45):136–156, 1990.
- [78] J.E. Hanson. *Computational Mechanics of Cellular Automata*. PhD thesis, University of California, Berkeley, 1993.
- [79] J.E. Hanson and J.P. Crutchfield. The attractor-basin portrait of a cellular automaton. *Journal of Statistical Physics*, 66:1415, 1992.
- [80] J.E. Hanson and J.P. Crutchfield. Computational mechanics of cellular automata: An example. *Physica D*, 103:169–189, 1997.
- [81] J. Hardy, Y. Pomeau, and G. de Pazzis. Thermodynamics and hydrodynamics for a modeled fluid. *Journal of Mathematical Physics A*, 13(5):1949–1961, 1976.
- [82] P.G. Harrald and D.B. Fogel. Evolving continuous behaviours in the iterated prisoner's dilemma. *BioSystems*, 37:135–145, 1996.
- [83] I. Harvey. The puzzle of the persistent question mark: A case study of genetic drift. In S. Forrest, editor, *Proceedings of the Fifth International Conference on Genetic Algorithms*. Morgan Kaufmann, 1993.
- [84] F. Higuera and J. Jimenez. Boltzmann approach to lattice gas simulations. *Europhysics Letters*, 9(7):663–668, 1989.

- [85] C.E. Hinton and S.J. Nowlan. How learning can guide evolution. *Complex Systems*, 1:495–502, 1987.
- [86] A. Hoffman. The ecology of cooperation. *Theory and Decision*, 50:101–118, 2001.
- [87] J.H. Holland. Nonlinear environments permitting efficient adaptation. *Computer and Information Sciences II (New York: Academic)*, 1967.
- [88] J.H. Holland. *Adaptation in Natural and Artificial Systems*. University of Michigan Press, Ann Arbor, 1975.
- [89] G. Iovine, D. D’Ambrosio, and S. DiGregorio. Applying genetic algorithms for calibrating a hexagonal cellular automata model for the simulation of debris flows characterised by strong inertial effects. *Geomorphology*, in press.
- [90] G. Iovine and S. DiGregorio. Sciddica (s2): alcune riflessioni sull’applicazione di un modello ad automi cellulari per la simulazione di colate detritiche. *Bollettino della Società Geologica Italiana*, 122:63–84, 2003.
- [91] G. Iovine, S. DiGregorio, D. D’Ambrosio, and V. Lupiano. Debris flows and cellular automata: an example of simulation from the 1998 disaster of Sarno (Italy). In *Geomorphology: from expert opinion to modelling*, pages 55–64, Strasbourg, France, April 2002. SODIMPAL Imprimeur, Rouen.
- [92] G. Iovine, S. DiGregorio, and V. Lupiano. Debris-flow susceptibility assessment through cellular automata modeling: an example from 15-16 December 1999 disaster at Cervinara and San Martino Valle Caudina (Campania, southern Italy). *Natural Hazards and Earth System Sciences*, 3:457–468, 2003.
- [93] R.M. Iverson. The physics of debris flows. *Reviews in Geophysics*, 35:245–296, 1997.
- [94] R.M. Iverson and R.P. Denlinger. Flow of variably fluidized granular masses across three-dimensional terrain. *Journal of Geophysical Research*, 106(B1):537–566, 2001.
- [95] R.M. Iverson, R.P. Denlinger, R.G. LaHusen, and M. Logan. Two-phase debris-flow accross 3-D terrain: Model predictions and experimental tests.

- In G.F. Wiecek and N.D. Naeser, editors, *Debris-Flow Hazard Mitigation: Mechanics Prediction, and Assessment. Proceedings 2nd International Conference on Debris Flow Hazards Mitigation*, pages 521–529. Balkema, Rotterdam, 2000.
- [96] N. Jakobi. Running across the reality gap: Octopod locomotion evolved in a minimal simulation. In P. Husbands and J.A. Meyer, editors, *Evolutionary Robotics. First European Workshop*, pages 39–58, Berlin, 1998. Springer-Verlag.
- [97] F. Jiménez-Morales. Evolving three-dimensional cellular automata to perform a quasiperiod-3(p3) collective behavior task. *Physical Review E*, 60(4):4934–4940, 1999.
- [98] F. Jiménez-Morales. An evolutionary approach to the study of non-trivial collective behavior in cellular automata. In S. Bandini, B. Chopard, and M. Tomassini, editors, *Cellular Automata. Proceedings 5th International Conference on Cellular Automata for Research and Industry, ACRI 2002*, LNCS, pages 32–43, Geneva, Switzerland, October 2002. Springer, Berlin.
- [99] F. Jiménez-Morales and J.J. Luque. Collective behavior of a probabilistic cellular automaton with two absorbing phases. *Physical Letters A*, 181:33–38, 1993.
- [100] A.M. Johnson. *Physical Processes in Geology*. Freeman and Cooper, San Francisco, 1970.
- [101] J. Kari. Reversibility of 2d cellular automata is undecidable. *Physica D*, 45:379–385, 1990.
- [102] D.K. Keefer, R.C. Wilson, R.K. Mark, E.E. Brabb, W.M. Brown III, S.D. Ellen, E.L. Harp, G.F. Wiecek, C.S. Alger, and R.S. Zatkun. Real-time landslide warning during heavy rainfall. *Science*, 238:921–925, 1987.
- [103] J.E. Kesseli. Disintegrating soil slips of the coast ranges of central California. *Journal of Geology*, 51(5):342–352, 1943.
- [104] V.I. Klenov. 2-d debris-flow simulation. In G.F. Wiecek and N.D. Naeser, editors, *Debris-Flow Hazards Mitigation: Mechanics, Prediction, and Assessment. Proceedings 2nd International Conference on Debris-Flow Hazards Mitigation*, pages 547–550, Taipei, Taiwan, 2000. A.A. Balkema, Rotterdam.

-
- [105] J.R. Koza. *Genetic Programming: On the Programming of Computers by Means of Natural Selection*. MIT Press, 1992.
- [106] K.W.C. Ku and M.W. Mak. Exploring the effects of lamarckian and baldwinian learning in evolving recurrent neural networks. In *Proceedings of the IEEE International Conference on Evolutionary Computation*, pages 617–621, 1997.
- [107] D. Laigle and L. Marchi. Example of mud/debris flow hazard assessment, using numerical models. In G.F. Wieczorek and N.D. Naeser, editors, *Debris-flow hazards mitigation: Mechanics, prediction, and assessment. Proceedings 2nd International Conference on debris-flow hazard mitigation*, pages 417–424, Taipei, Taiwan, 2000.
- [108] L. Landau. *Fisica dei Fluidi*. Edizioni MIR, 1984.
- [109] C.G. Langton. Self-reproduction in cellular automata. *Physica D*, (10):135–144, 1984.
- [110] C.G. Langton. Studying artificial life with cellular automata. *Physica D*, (22):120–149, 1986.
- [111] C.G. Langton. *Computation at the edge of chaos*. PhD thesis, University of Michigan, 1990.
- [112] C.G. Langton. Computation at the edge of chaos: phase transition and emergent computation. *Physica D*, (42):12–37, 1990.
- [113] C.G. Langton. *Artificial Life*, volume IV of *Santa Fe Institute Studies in the Sciences of Complexity*, pages 1–47. Addison-Wesley, Reading, MA, 1998.
- [114] P. Larrañaga, C.M.H. Kuijpers, R.H. Murga, I. Inza, and S. Dizdarevic. Genetic algorithms for the travelling salesman problem: A review of representation and operators. *Artificial Intelligence Review*, 13:129–170, 1999.
- [115] A.A. Lipnitskii. Use of genetic algorithms for solution of the rectangle packing problem. *Cybernetics and Systems Analysis*, 38(6):943–946, 2002.
- [116] A.L. Little and V.E. Price. The use of an electronic computer for slope stability computation. *Géotechnique*, 8:113–120, 1958.

- [117] K.F. Liu and K.W. Lai. Numerical simulation of two-dimensional debris flows. In G.F. Wieczorek and N.D. Naeser, editors, *Debris-flow hazards mitigation: Mechanics, prediction, and assessment. Proceedings 2nd International Conference on debris-flow hazard mitigation*, pages 531–535, Taipei, Taiwan, 2000.
- [118] L.S. Luo. Theory of the lattice Boltzmann method: Lattice Boltzmann models for nonideal gases. *Physical Review E*, 62(4):4982–4996, 2000.
- [119] B.D. Malamud and D.L. Turcotte. Self-organized criticality applied to natural hazards. *Natural Hazards*, 20:93–116, 1999.
- [120] B.D. Malamud and D.L. Turcotte. Cellular automata models applied to natural hazards. *IEEE Computing in Science & Engineering*, 2(3):42–51, 2000.
- [121] E. Marchi and A. Rubatta. *Meccanica dei fluidi. Principi e applicazioni*. UTET, Torino, 1981.
- [122] R.K. Mark and S.D. Ellen. Statistical and simulation models for mapping debris-flow hazard. In A. Carrara and F. Guzzetti, editors, *Geographical Information Systems in assessing natural hazards*, pages 93–106, 1995.
- [123] D. Marocco, A. Cangelosi, and S. Nolfi. The role of social and cognitive abilities in the emergence of communication: Experiments in evolutionary robotics. In *EPSRC/BBSRC International Workshop Biologically-Inspired Robotics HP*, pages 174–181, 2002.
- [124] A.R. McBirney and T. Murase. Rheological properties of magmas. *Annual Review on Earth and Planetary Sciences*, 12:337–357, 1984.
- [125] H. McIntosh. Wolfram’s class IV automata and a good life. *Physica D*, (45):105–121, 1990.
- [126] G.R. McNamara and G. Zanetti. Use of the Boltzmann equation to simulate lattice-gas automata. *Physical Review Letters*, 61:2332–2335, 1988.
- [127] O. Miglino, H.H. Lund, and S. Nolfi. Evolving mobile robots in simulated and real environments. *Artificial Life*, 4(2):417–434, 1995.
- [128] M. Mitchell. *An Introduction to Genetic Algorithms*. MIT Press, 1996.

-
- [129] H. Miyamoto and S. Sasaki. Simulating lava flows by an improved cellular automata method. *Computers & Geosciences*, 23:283–292, 1997.
- [130] E. Moore. Machine models of self-reproduction. In *Proceedings Symposium on Applied Mathematics*, pages 17–33, 1962.
- [131] N.R. Morgenstern and V.E. Price. A numerical method for solving the equations of stability of general slip surfaces. *Computer Journal*, 9:388–393, 1967.
- [132] S. Munroe and A. Cangelosi. Learning and the evolution of language: the role of cultural variation and learning cost in the baldwin effect. *Artificial Life*, 8:311–339, 2003.
- [133] A.B. Murray and C. Paola. A cellular model of braided rivers. *Nature*, 371:54–57, 1994.
- [134] A.B. Murray and C. Paola. Properties of a cellular braided-stream model. *Earth Surface Processes and Landforms*, 22(11):1001–1025, 1997.
- [135] J. Myhill. The converse of Moore’s Garden-of-Eden theorem. In *Proceedings Symposium on Applied Mathematics*, pages 658–686, 1963.
- [136] United Nations. *Mudflows. Experience and lessons learned from the management of major disasters*. Department of Humanitarian Affairs, Geneva, 1987.
- [137] S. Nolfi. Evolving non-trivial behaviors on real robots: A garbage collecting robot. *Robotics and Autonomous System*, 22:187–198, 1997.
- [138] S. Nolfi. How learning and evolution interact: The case of a learning task which differs from the evolutionary task. *Adaptive Behavior*, 7(2):231–236, 1999 (copyright 2000).
- [139] S. Nolfi, J.L. Elman, and D. Parisi. Learning and evolution in neural networks. *Adaptive Behavior*, 3(1):5–28, 1994.
- [140] S. Nolfi and D. Floreano. *Evolutionary Robotics: The Biology, Intelligence, and Technology of Self-Organizing Machines (Intelligent Robotics and Autonomous Agents)*. MIT Press, 2000.

-
- [141] S. Nolfi and D. Marocco. Evolving visually-guided robots able to discriminate between different landmarks. In J.A. Meyer, A. Berthoz, D. Floreano, H.L. Roitblat, and S.W. Wilson, editors, *From Animals to Animats 6. Proceedings of the VI International Conference on Simulation of Adaptive Behavior*, Cambridge, MA, 2000. MIT Press.
- [142] S. Nolfi and D. Marocco. Evolving robots able to integrate sensory-motor information over time. *Theory in Bioscience*, 120:287–310, 2001.
- [143] S. Nolfi and D. Marocco. Active perception: A sensorimotor account of object categorization. In *From Animals to Animats 7. Proceedings of the 7th International Conference on Simulation of Adaptive Behavior*, 2002.
- [144] S. Nolfi and D. Marocco. Evolving robots able to visually discriminate between objects with different size. *International Journal of Robotics and Automation*, 17(4):163–170, 2002.
- [145] J.C. Oh. Promoting cooperation using kin biased conditional strategy in the iterated prisoner’s dilemma game. *Information Science*, 133:149–164, 2001.
- [146] M. Oliphant. The dilemma of saussurean communication. *BioSystems*, 37:31–38, 1996.
- [147] G.C. Onwubolu and M. Mutingi. A genetic algorithm approach for cutting stock problem. *Journal of Intelligent Manufacturing*, 14:209–218, 2003.
- [148] P. Pacheco. *Parallel Programming With MPI*. Morgan Kaufmann, San Francisco, 1996.
- [149] P. Pantano. Autoreplicazione in automi cellulari caratterizzati da regole di transizione non complesse. *Comunicazione personale*, 2003.
- [150] D. Parisi and S. Nolfi. How learning can influence evolution within a non-lamarckian framework. In R. K. Belew and M. Mitchell, editors, *Adaptive Individuals in Evolving Populations*, volume XXVI of *SFI Studies in the Science of Complexity*. Addison-Wesley, 1996.
- [151] PGAPack. Home Page: http://www-fp.mcs.anl.gov/CCST/research/reports_pre1998/comp_bio/stalk/pgapack.html.
- [152] A. Prügel-Bennett. Finite population effects for ranking and tournament selection. *Complex Systems*, 12(2):183–205, 2000.

-
- [153] A. Prügel-Bennett and J.L. Shapiro. An analysis of genetic algorithms using statistical mechanics. *Physical Review Letters*, 72(9):1305–1309, 1994.
- [154] A. Prügel-Bennett and J.L. Shapiro. The dynamics of a genetic algorithm for simple random ising systems. *Physica D*, 104:75–114, 1997.
- [155] Y.H. Qian, D. d’Humières, and P. Lallemand. Lattice BGK models for Navier-Stokes equation. *Europhysics Letters*, 17(6):470–484, 1992.
- [156] A. Quarteroni and A. Valli. *Numerical Approximation of Partial Differential Equations*. Springer Series in Computational Mathematics. Springer Verlag, 2nd edition, 1997.
- [157] I. Rechenberg. *Evolutionstrategie: Optimierung Technischer Systeme nach Prinzipien der Biologischen Evolution*. Fromman-Holzboog (Struttgart), 1973.
- [158] A. Rogers and A. Prügel-Bennett. The dynamics of a genetic algorithm on a model hard optimization problem. *Complex Systems*, 11(6):437–464, 2000.
- [159] A. Roli and F. Zambonelli. Emergence of macro spatial structures in dissipative cellular automata. In S. Bandini, B. Chopard, and M. Tomassini, editors, *Cellular Automata. Proceedings 5th International Conference on Cellular Automata for Research and Industry, ACRI 2002*, LNCS, pages 32–43, Geneve, Switzerland, October 2002. Spinger, Berlin.
- [160] D.H. Rothman and S. Zaleski. Lattice-gas models of phase separation: interfaces, phase transitions, and multiphase flow. *Review of Modern Physics*, 66(4):1417–1479, 1994.
- [161] H. Rouse. *Engineering Hydraulics*. John Wiley & Sons, Chichester, 1950.
- [162] T.P. Runarsson and M.T. Jonsson. Genetic production systems for intelligent problem solving. *Journal of Intelligent Manufacturing*, 10:181–186, 1999.
- [163] F. Sandersen, S. Bakkeoi, E. Hestnes, and K. Lied. The influence of meteorological factors on the initiation of debris flows, rockfalls, rockslides and rockmass stability. In K. Senneset, editor, *Landslides, Proceedings 7th International Symposium on Landslides*, volume 1, pages 94–114, Trondheim, 1996. Balkema, Rotterdam.

- [164] K. Sassa. Motion of landslides and debris flows. Report for grant-in-aid for scientific research, (project no.61480062), Japanese Ministry on Education, Science and Culture, Tokyo, 1988.
- [165] K. Sassa. Special lecture: Geotechnical model for the motion of landslides. In C. Bonnard, editor, *Landslides. Proceedings 5th International Symposium on Landslides*, volume 1, pages 37–56, Lausanne, Switzerland, 1988. A.A. Balkema, Rotterdam.
- [166] E. Segre and C. Deangeli. Cellular automaton for realistic modelling of landslides. *Nonlinear Processes in Geophysics*, 2(1):1–15, 1995.
- [167] G.A. Sena, D. Magherbi, and G. Isern. Implementation of a parallel genetic algorithm on a cluster of workstations: Travelling salesman problem, a case study. *Future Generation Computer Systems*, 17:477–488, 2001.
- [168] R. Serra. *Calcolo Parallelo, automi cellulari e modelli per sistemi complessi*, chapter Prefazione, pages 11–14. Franco Angeli, 1999.
- [169] C.C. Simpson. The baldwin effect. *Evolution*, 7:110–117, 1953.
- [170] R. Smith. The application of cellular automata to the erosion of landforms. *Earth Surface Processes and Landforms*, 16:273–281, 1991.
- [171] S. Succi. *Automi Cellulari*. Francoangeli, Milano, 1991.
- [172] S. Succi. Lattice Boltzmann schemes for quantum applications. *Computer Physics Communications*, 146:317–323, 2002.
- [173] T. Takahashi. Initiation and flow of various types of debris flow. In G.F. Wieczorek and N.D. Naeser, editors, *Debris-flow hazards mitigation: Mechanics, prediction, and assessment*, Proceedings 2nd International Conference on debris-flow hazard mitigation, pages 15–25, Taipei, Taiwan, August 2000.
- [174] J.W. Thacher. Universality in the von neumann cellular model. In A.W. Burks, editor, *Essays on Cellular Automata*, pages 103–131, Champaign, 1970. University of Illinois Press.
- [175] T. Toffoli. Cellular automata as an alternative to (rather than an approximation of) differential equations in modeling physics. *Physica D*, 10:117–127, 1984.

- [176] T. Toffoli and N. Margolus. *Cellular Automata Machines*. MIT Press, Cambridge, 1987.
- [177] T. Toffoli and N. Margolus. Invertible cellular automata: A review. *Physica D*, 45:229–253, 1990.
- [178] M. Tomassini. Parallel and distributed evolutionary algorithms: A review. In P. Neittaanmäki k. Miettinen, M. Mäkelä and J. Periaux, editors, *Evolutionary Algorithms in Engineering and Computer Science*, pages 113–133, Chichester, UK, 1999. John Wiley & Son.
- [179] M. Tomassini and M. Venzi. Artificially evolved asynchronous cellular automata for the density task. In S. Bandini, B. Chopard, and M. Tomassini, editors, *Cellular Automata. Proceedings 5th International Conference on Cellular Automata for Research and Industry, ACRI 2002*, LNCS, pages 32–43, Geneve, Switzerland, October 2002. Springer, Berlin.
- [180] E.F. Toro. *Riemann solvers and numerical methods for fluid dynamics*. Springer, 1997.
- [181] M. Villani, M. Padovani, M. Andretta, M. Mazzanti, R. Serra, B. Mueller, H.P. Ratzke, R. Rongo R., W. Spataro, and S. DiGregorio. Bioremediation modeling: from the pilot plant to the field. In V.S. Magar, T.M. Vogel, C.M. Aelion, and A. Leeson, editors, *Innovative Methods in support of Bioremediation. In situ Bioremediation of Petroleum Hydrocarbon and Other Organic Compounds, The Sixth International In situ and On-Site Bioremediation Symposium*, San Diego , California, 2001. Battelle Press, Columbus, Richland.
- [182] J. von Neumann. *Theory of self-reproducing automata*. University of Illinois Press, Urbana, Illinois, 1966. (Edited and completed by A. Burks).
- [183] C.H. Waddington. Canalization of development and the inheritance of acquired characters. *Nature*, 150:563–565, 1942.
- [184] J.R. Weimar. *Simulation with Cellular Automata*. Logos Verlag, Berlin, 1997.
- [185] D. Whitley, V. Gordan, and K. Mathias. Lamarckian evolution, the baldwin effect and function optimization. In Y. Davidor et al., editor, *Parallel Solving From Nature*, pages 6–15. Springer, 1994.

-
- [186] G.F. Wieczorek. Effect of rainfall intensity and duration on debris flows in central Santa Cruz Mountains, California. *Reviews in Engineering Geology*, 7:93–104, 1987.
- [187] G.F. Wieczorek and N.D. Naeser, editors. *Debris-flow hazards mitigation: mechanics, prediction, and assessment*, Rotterdam, 2000. Proceedings 2nd International Conference on Debris Flow Hazards Mitigation, Balkema.
- [188] R.V. Withman and W.A. Bailey. Use of computers for slope stability analysis. *Journal of the Soil Mechanics and Foundations Division*, 93:475–498, 1967.
- [189] S. Wolfram. Statistical mechanics of cellular automata. *Reviews of Modern Physics*, 55:601–644, 1983.
- [190] S. Wolfram. Cellular automaton fluids 1: Basics theory. *Journal of Statistical Physics*, 45(3/4):471–526, 1986.
- [191] S. Wolfram. *A new kind of Science*. Wolfram Media Inc., Champaign, 2002.
- [192] A. Wuensche. Classifying cellular automata automatically; finding gliders, filtering, and relating space-time patterns, attractor basins, and the z parameter. *COMPLEXITY*, 4(3):47–66, 1999.
- [193] A. Wuensche. Basins of attraction in cellular automata; order-complexity-chaos in small universes. *COMPLEXITY*, 5(6):19–26, 2000.
- [194] A. Wuensche and M. Lesser. *The Global Dynamics of Cellular Automata: An Atlas of Basin of Attraction Fields of One-Dimensional Cellular Automata*. Addison-Wesley, 1992.