

CURRICULUM VITAE

Name: Martyn Richard Amos
Date of birth: <redacted>
Email: martyn.amos@northumbria.ac.uk
Google Scholar: Sorted by [publication date](#) and [citation count](#).
WWW: <http://www.martynamos.org>

EDUCATION AND QUALIFICATIONS

July 1993-
August 1997 **University of Warwick.**
Ph.D. Computer Science.
Thesis title: DNA Computation. Supervisor: Prof. Alan Gibbons.

October 1989-
June 1993 **Coventry University.**
B.Sc. (Hons) Computer Science (with a period of industrial training) (2:i).

EMPLOYMENT

September 2018-
present **Northumbria University.**
Professor of Computer and Information Sciences.
Acting Head of Department, November 2021-.

August 2012-
August 2018 **Manchester Metropolitan University.**
Professor of Novel Computation
and Director of the Centre for Advanced Computational Science.

July 2010-
July 2012 **Manchester Metropolitan University.**
Reader in Novel Computation.
July 2006-
July 2010 **Manchester Metropolitan University.**
Senior Lecturer in Computing.

April 2003-
June 2006 **University of Exeter.**
Lecturer in Computer Science.
July 2002-
March 2003 **University of Exeter.**
Lecturer in Bioinformatics.

February 2000-
June 2002 **University of Liverpool.**
Lecturer in Bioinformatics.
November 1999-
January 2000 **University of Liverpool.**
Research Associate, EPSRC/BBSRC Joint Bioinformatics
Programme.

October 1997-
October 1999 **University of Liverpool.**
Leverhulme Special Research Fellow.

September 1991-
September 1992 **ICL.**
Industrial trainee (during degree), UK Ministry of Defence,
Corporate Headquarters Office Technology System
(CHOTS) project.

I have also held Visiting Professorships at the **Universitat de les Illes Balears, Spain** (2000) and **Universidad Politécnic de Madrid, Spain** (2008-10).

RESEARCH

I was one of the founders of the field of DNA computing, and I wrote one of the first research monographs in the area. Current research interests include synthetic biology, nature-inspired algorithms, complexity science, and crowd simulation (with a particular interest in safety engineering).

External research grants

To date, I have obtained over £3M in external research funding as Principal Investigator:

- AHRC/NRC Canada: NEED: Networking Activity for Enhanced Evacuation Drills, **£16,161**, Nov. 2018-Apr. 2019.
- European Commission FP7: TRUCE, **€509,745**. Ref: INFSO-ICT-318235, Oct. 2012-Sep. 2015.
- European Commission FP7: COBRA, **€484,635**. Ref: INFSO-ICT-270371, Dec. 2010-Nov. 2013.
- European Commission FP7: BACTOCOM, **€1.95 million**. Ref: INFSO-ICT-248919, Feb. 2010-Jun. 2013.
- Wellcome Trust People Award: Manchester DIYbio, **£29,705**. Ref: WT095313MA, Mar. 2011-Sep. 2012.
- EPSRC Bridging the Gaps: Nano-Info-Bio, **£289,095** (plus an additional **£50,000** of discretionary funding). Ref: EP/H000291/1, Sep. 2009-Aug. 2011.
- EPSRC Novel Computation Cluster on Molecular and Cellular Computing, **£54,591**, Ref: GR/S66657/01, Dec. 2003-Dec. 2004.

Funding obtained as a co-investigator:

- Society for Applied Microbiology Public Engagement Grant: Simfection, **£9,000**, 2014-2017.
- European Commission Information Society Technologies programme, Mol-CoNet: Thematic Network on Molecular Computing, **€325,000**, Ref: IST-2001-32008, Dec. 2001-Dec.2004.
- Wolfson Foundation, Establishment of a Bioinformatics Laboratory, University of Liverpool, **£137,719**, December 2000.

TEACHING

I have >20 years experience of University-level teaching, and have taught units across the spectrum of computer science, at both undergraduate and Masters level (the following is a non-exhaustive representative sample):

- Information Systems (UG).
- Problem Solving by Computer (UG).
- Theory of Computer Science (UG).
- Nature-Inspired Computing (UG).
- Biocomputing and Bioinformatics (UG).
- Human-Computer Interaction (UG/PG).
- Programming (UG and PG).
- Introduction to Computer Systems (PG).
- Bioinformatics (PG).
- Biosystems (PG).
- Bioethics (PG).
- Web Programming (UG).
- Software Agents and Optimisation (UG).

EXAMINING

Doctorates (as external examiner)

- School of Animal and Microbial Sciences, University of Reading, Sep.18, 2003.
- School of Informatics, University of Edinburgh, Dec. 13, 2005.
- Department of Computer Science, University of Sheffield, Jan. 18, 2007.
- Departament de Filologies Romàniques, Universitat Rovira i Virgili, Tarragona, Spain, Apr. 11, 2008.
- Department of Computer Science, University of York, Dec. 11, 2008.
- School of Computing, Edinburgh Napier University, Oct. 19, 2011.
- Department of Computer Science, University of Nottingham, Dec. 6, 2012.
- School of Computing, Newcastle University, Aug. 2, 2016.
- Clarendon Laboratory, University of Oxford, Aug. 18, 2016.
- School of Electronic Engineering and Computer Science, University of Southampton, Apr. 20, 2018.
- School of Computer Science, Heriot-Watt University, May 31, 2018.
- Department of Informatics, King's College London, Oct.23, 2019.
- School of Computing and Mathematical Sciences, University of Greenwich, Jan. 27, 2021.
- Division of Biosciences, University College London, Jan. 27, 2022.

Taught programmes

- External Examiner for undergraduate degrees, School of Science and Technology, Blackburn College (2008-2011), and School of Engineering and Computing, Blackpool and The Fylde College (2007-2010).
- External Examiner for M.Sc. degrees in Bioinformatics, Neuroinformatics, Synthetic Biology and Computational Systems Biology, School of Computing, Newcastle University (2013-2017).

PHD SUPERVISION

I have supervised six Ph.D. students to successful completion (as main supervisor or Director of Studies):

- Pete Harding (MMU, 2012).
- Danny Richards (MMU, 2013).
- Matt Crossley (MMU, 2014).
- Henry Dorrian (MMU, 2015).
- Kate Carolan (MMU, 2017).
- Jamie Webster (Northumbria, 2021).

MANAGEMENT RESPONSIBILITIES

- I am currently Acting Head of the Department of Computer and Information Sciences at Northumbria.
- At MMU I was Director of the Centre for Advanced Computational Science, and coordinated the UoA11 return to REF2014. At Northumbria, I was Impact Lead for UoA11 in REF2021.
- At Liverpool I served as the Director of Studies for the M.Sc. in Biosystems and Informatics. This position covered all aspects of the course, from development, recruitment and selection, to administration, teaching and examination.

PROFESSIONAL ACTIVITIES

Roles and Memberships

- Fellow of the British Computer Society (2018-).
- Member of the EPSRC College of Peer Reviewers (2010-).
- External reviewer for European Commission research projects (2011-).
- Series Editor, *Synthesis Lectures on Synthetic Biology*, Morgan and Claypool (ongoing).
- Member, Editorial Board, *International Journal of Unconventional Computation* (ongoing).

PUBLIC ENGAGEMENT ACTIVITIES

Speaking

- I am a regular contributor to the *Speakers for Schools* initiative ([speaker profile](#)), which arranges talks in state schools by "individuals who have come to be a leader in their field or industry". Pupil feedback included "I want to do Computer Science at University now".
- I have participated in a number of festivals, including appearances at both the Edinburgh Book and Science Festivals, Lancaster and Bradford Literature Festivals, and the Manchester Science Festival, and given talks at the Institute for Contemporary Arts (organised by the Royal Institution), and at a number of Cafes Scientifique and SciBar meetings.
- I spoke to 700 A-level students at a "[Computer Science in Action](#)" event at Imperial College (November 9, 2017).

Writing

- My popular science book *Genesis Machines* (Atlantic, 2006) was described in *The Guardian* as "Fascinating... His lucid and punchy prose conveys a genuine excitement of the frontier"; *Times Higher Education* said that "Amos is a born communicator, that rare breed among scientists who write fluently in an understandable and approachable way about difficult concepts."
- I co-edited the *Beta Life* "science-into-fiction" collection (Comma, 2015), which was described in *The Guardian* as "A timely... strong anthology... (which) offers a crash course in futurology".
- I wrote the [entry on "DNA computing"](#) for the *Encyclopædia Britannica*, and have validated a Guinness World Record ("World's smallest biological computing device", personally acknowledged in the 2004 edition).
- I have written science-related articles for a number of print publications, including *GQ*, *New Scientist*, and *Times Higher Education*.

TV, radio and print media

- I served as the scientific consultant for *Danger Decoded*, a documentary series shown in more than 170 countries on the *National Geographic* channel.
- I have made a number of TV (BBC News) and radio appearances (BBC R4 [Open Book](#) and [Material World](#) shows, various local radio stations), talking about various aspects of my work.
- I have been interviewed by a number of print publications, including [The Guardian](#), [Sunday Times](#), [New Scientist](#), [Times Higher Education](#), and [Nature](#).

Education/outreach

- I was a co-investigator on a project funded by the Society for Applied Microbiology, called *Simfection*, which uses a combination of computer simulation and educational resources to teach young people about the benefits of vaccination ([website](#)).
- I served for a number of years as an unpaid director of Comma Press, an award-winning not-for-profit publisher based in Manchester. My specific remit was to help develop science-based projects, and to bridge gaps between the Universities and local creative communities.
- Between 2009-10 I held a [University Public Engagement fellowship](#), which allowed me to set up a "community coding" project in a deprived part of Manchester.
- Our 2011 DIYBIO project (of which I was the coordinator) received £30K of funding from the Wellcome Trust to set up a "community bio-hacking" space in Manchester, and was featured on the [BBC Ten-o-clock News](#).
- The BACTOCOM project that I coordinated features in the Revolution Manchester gallery at the Museum of Science and Industry, alongside a replica of the Baby computer.
- I have acted as an external consultant on public engagement for two other Universities (Sheffield and Leeds), and this is an ongoing arrangement.

LIST OF PUBLICATIONS

Books

1. Stepney, S., Rasmussen, S. & Amos, M. (Eds.) (2018) *Computational Matter*. Springer.
2. Amos, M. & Condon, E. (Eds.) (2016) *Unconventional Computation and Natural Computation: 15th International Conference (UCNC 2016)*, Manchester, UK, July 11-15, 2016, Proceedings. Lecture Notes in Computer Science (LNCS) Vol. 9726, Springer.
3. Amos, M. and Page, R. (Eds.) (2014) *Beta-Life: Short Stories from an A-Life Future*. Comma Press.
4. Amos, M. (2006) *Genesis Machines: The New Science of Biocomputing*. Atlantic Books.
5. Amos, M. (2005) *Theoretical and Experimental DNA Computation*. Research monograph in the Natural Computing Series, Springer.
6. Amos, M. (Ed.) (2004) *Cellular Computing*. Series in Systems Biology, Oxford University Press.

Refereed journal articles

1. Peake, J., Amos, M., Costen, N., Masala, G. & Lloyd, H. (2022) PACO-VMP: Parallel Ant Colony Optimization for Virtual Machine Placement. *Future Generation Computer Systems* 129, 174-186. doi:10.1016/j.future.2021.11.019.
2. Lloyd, H., Crossley, M., Sinclair, M. & Amos, M. (2021) J-POP: Japanese Puzzles as Optimization Problems. *IEEE Transactions on Games*. doi: 10.1109/TG.2021.3081817.
3. Kinatader, M., Ma, C., Gwynne, S., Amos, M. & Benichou, N. (2020) Where drills differ from evacuations: A case study on Canadian buildings. *Safety Science* 135, 105114. doi:10.1016/j.ssci.2020.105114.
4. Webster, J. & Amos, M. (2020) A Turing test for crowds. *Royal Society Open Science* 7:200307. doi: 10.1098/rsos.200307.
5. Gwynne, S., Amos, M., Kinatader, M., Benichou, N., Boyce, K., van der Wal, C.N. & Ronchi, E. (2020) The future of evacuation drills: assessing and enhancing evacuee performance. *Safety Science* 129. doi: 10.1016/j.ssci.2020.104767.
6. Lloyd, H. & Amos, M. (2020) Solving Sudoku with Ant Colony Optimization. *IEEE Transactions on Games* 12:3, p.p. 302-311. doi: 10.1109/TG.2019.2942773.
7. Grozinger, L., Amos, M., Gorochowski, T., Carbonell, P., Oyarzún, D., Stoof, R., Fellermann, H., Zuliani, P., Tas, H. & Goñi-Moreno, A. (2019) Pathways to cellular supremacy in biocomputing. *Nature Communications* 10. doi: 10.1038/s41467-019-13232-z.
8. Goñi-Moreno, A., de la Cruz, F., Rodriguez-Paton, A., & Amos, M. (2019) Dynamical task switching in cellular computers. *Life* 9(1), 14. doi: 10.3390/life9010014.
9. Adrian, J., Amos, M., Baratchi, M., et al. (2019) A glossary for research on human crowd dynamics. *Collective Dynamics* 4, pp. 1-13. doi: 10.17815/CD.2019.19.
10. Carolan, K., Verran, J., Amos, M., Crossley, M., Redfern, J., Whitton, N. & Louttit, D. (2018). SimFection: A digital resource for vaccination education. *Journal of Biological Education*, doi: 10.1080/00219266.2018.1469534.
11. Carolan, K., Verran, J., Crossley, M., Redfern, J., Whitton, N. & Amos, M. (2018). Impact of educational interventions on adolescent attitudes and knowledge regarding vaccination: a pilot study. *PLOS ONE* 13(1): e0190984. doi: 10.1371/journal.pone.0190984.
12. Richards, D. & Amos, M. (2016c). Shape optimization with surface-mapped CPPNs. *IEEE Transactions on Evolutionary Computation* 21:3, 391-407. doi: 10.1109/TEVC.2016.2606040.
13. Goñi-Moreno, A., Carcajona, M., Kim, J., Martinez-García, E., Amos, M. & de Lorenzo, V. (2016). An implementation-focused bio/algorithmic workflow for synthetic biology. *ACS Synthetic Biology* 5:10, 1127-1135. doi: 10.1021/acssynbio.6b00029.
14. LLanes, A., Cecilia, J., Sanchez, A., Garcia, J.M., Amos, M. & Ujaldon, M. (2016). Dynamic load balancing on heterogeneous clusters for parallel ant colony optimization. *Cluster Computing* 19:1, 1-11. doi: 10.1007/s10586-016-0534-4.
15. Amos, M., Axmann, I., Bluethgen, N., de la Cruz, F., Jaramillo, A., Rodriguez-Paton, A. & Simmel, F. (2015). Bacterial computing with engineered populations. *Philosophical Transactions of the Royal Society A* 373:2046. doi: 10.1098/rsta.2014.0218.

16. Guerrero, G.D., Cecilia, J.M., Llanes, A., Garcia, J.M., Amos, M. & Ujaldon, M. (2014) Comparative evaluation of platforms for parallel Ant Colony Optimization. *Journal of Supercomputing* 69:1, 318-329. doi: 10.1007/s11227-014-1154-5.
17. Amos, M. (2014) Population-based microbial computing: A third wave of synthetic biology? *International Journal of General Systems* 43:7, 770-782. doi:10.1080/03081079.2014.921001.
18. Verran, J., Crossley, M., Carolan, K., Jacobs, N. & Amos, M. (2013) Monsters, microbiology and mathematics: the epidemiology of a zombie apocalypse. *Journal of Biological Education* 48:2, 98-104. doi: 10.1080/00219266.2013.849283.
19. Dorrián, H., Borresen, J. & Amos, M. (2013) Community structure and multi-modal oscillations in complex networks. *PLOS ONE* 8(10): e75569. doi: 10.1371/journal.pone.0075569.
20. Goñi-Moreno, A., Amos, M. & de la Cruz, F. (2013) Multicellular computation using conjugation for wiring. *PLOS ONE* 8(6): e65986. doi:10.1371/journal.pone.0065986.
21. Cecilia, J.M., Nisbet, A., Amos, M., Garcia, J.M. & Ujaldon, M. (2013) Enhancing GPU parallelism in nature-inspired algorithms. *Journal of Supercomputing* 63:3, p.p. 773-789. doi:10.1007/s11227-012-0770-1.
22. Cecilia, J.M., Garcia, J.M., Nisbet, A., Amos, M. & Ujaldon, M. (2013) Enhancing data parallelism for ant colony optimisation on GPUs. *Journal of Parallel and Distributed Computing* 73:1, p.p. 42-51. doi:10.1016/j.jpdc.2012.01.002.
23. Goñi-Moreno, A. & Amos, M. (2012a) A reconfigurable NAND/NOR genetic logic gate. *BMC Systems Biology* 6:126. doi:10.1186/1752-0509-6-126.
24. Goñi-Moreno, A. & Amos, M. (2012) Continuous computation in engineered gene circuits. *BioSystems* 109:1, p.p. 52-56. doi: 10.1016/j.biosystems.2012.02.001.
25. Amos, M. & Coldridge, J. (2012) A genetic algorithm for the Zen Puzzle Garden game. *Natural Computing* 11:3, p.p. 353-359. doi:10.1007/s11047-011-9284-7.
26. Houston, R., White, J. & Amos, M. (2012) Zen Puzzle Garden is NP-complete. *Information Processing Letters* 112:3, p.p. 106-108, doi:10.1016/j.ipl.2011.10.016.
27. Harding, P., Gwynne, S. & Amos, M. (2011) Mutual information for the detection of crush. *PLoS ONE* 6(12): e28747, doi:10.1371/journal.pone.0028747.
28. Amos, M., Dittrich, P., McCaskill, J. & Rasmussen, S. (2011) Biological and chemical information technologies. *Procedia Computer Science* 7, p.p. 56-60, doi:10.1016/j.procs.2011.12.019.
29. Goñi-Moreno, A. & Amos, M. (2011) Model for a population-based microbial oscillator. *BioSystems* 105:3, p.p. p.p.286-294, doi:10.1016/j.biosystems.2011.05.011.
30. Gibbons, A. & Amos, M. (2010) Wave propagation in filamental cellular automata. *International Journal of Natural Computing Research* 1:1, p.p. 56-69. doi:10.4018/jncr.2010010103.
31. Shasha, D. & Amos, M. (2009) DNA hash pooling and its applications. *International Journal of Nanotechnology and Molecular Computation* 1:1, p.p. 18-32.
32. Amos, M. & Don, O. (2008) Swarm-based spatial sorting. *International Journal of Intelligent Computing and Cybernetics* 1:3, p.p. 454-473. doi:10.1108/17563780810893491.
33. Xiao, R-B., Xu, Y-C. & Amos, M. (2007) Two hybrid compaction algorithms for the layout optimization problem. *BioSystems* 90:2, p.p. 560--567. doi:10.1016/j.biosystems.2006.12.007.
34. Amos, M., Hodgson, D.A. & Gibbons, A. (2007) Bacterial self-organisation and computation. *International Journal of Unconventional Computing* 3:3, p.p. 199--210.
35. Timmis, J., Amos, M., Banzhaf, W. & Tyrrell, A. (2006) "Going back to our roots": Second generation biocomputing. *International Journal of Unconventional Computing* 2:4, p.p. 349-378.
36. Hodgson, D.A., Owenson, G., Amos, M. & Gibbons, A. (2003) Towards molecular computation. *Electronics Information and Planning* 31:7-8, p.p. 159-165.
37. Amos, M., Paun, G., Rozenberg, G. & Salomaa, A. (2002) Topics in the theory of DNA computing. *Theoretical Computer Science* 287:1, 3-38. doi:10.1016/S0304-3975(02)00134-2.
38. Owenson, G.G., Amos, M., Hodgson, D.A. & Gibbons, A. (2001) DNA-based logic. *Soft Computing* 5:2, 102-105. doi:10.1007/s0050000000073.
39. Amos, M., Gibbons, A. & Dunne, P.E. (1998) Toward feasible and efficient DNA computation *Complexity* 4:1, 14-18.
40. Gibbons, A., Amos, M. & Hodgson, D. (1997) DNA computing. *Current Opinion in Biotechnology* 8:1, 103-106. doi:10.1016/S0958-1669(97)80164-4.

Refereed conference papers

1. Webster, J. & Amos, M. (2021) Identification of lifelike characteristics of human crowds through a classification task. *Proc. Conference on Artificial Life (ALIFE2021)*, Prague, Czech Republic, Jul. 19-23 2021, MIT Press. doi:10.1162/isal_a_00360.
2. Peake, J., Amos, M., Yiapanis, P. & Lloyd, H. (2019) Scaling techniques for parallel Ant Colony Optimization on large problem instances. *Proc. Genetic and Evolutionary Computation Conference (GECCO)*, Prague, July 13th-17 2019, pp. 47-54. doi: 10.1145/3321707.3321832.
3. Amos, M., Crossley, M. & Lloyd, H. (2019) Solving Nurikabe using Ant Colony Optimization. *Genetic and Evolutionary Computation Conference (GECCO) Companion*, Prague, July 13th-17th 2019, pp. 129-130. doi: 10.1145/3319619.3338470.
4. Eliot, N., Kendall, D., Moon, A., Brockway, M. & Amos, M. (2019) Void reduction in self-healing swarms. *Proc. Conference on Artificial Life (ALIFE)*, Newcastle upon Tyne, July 29-August 2 2019, pp. 87-94. doi: 10.1162/isal_a_00146.
5. Peake, J., Amos, M., Yiapanis, P. & Lloyd, H. (2018). Vectorized candidate selection for parallel ant colony optimization. *Proc. Genetic and Evolutionary Computation Conference Companion (GECCO '18)*, July 15-19 2018, Kyoto, Japan, pp. 1300-1306. doi: 10.1145/3205651.3208274.
6. Lloyd, H. & Amos, M. (2017). Analysis of independent roulette selection in parallel ant colony optimization. *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '17)*, July 15-19 2017, Berlin, Germany, pp. 19-26. doi: 10.1145/3071178.3071308 (nominated for a Best Paper Award).
7. Lloyd, H. & Amos, M. (2016). A highly parallelized and vectorized implementation of Max-Min Ant System on Intel Xeon Phi. *IEEE Symposium Series on Computational Intelligence (SSCI)*, December 6-9 2016, Athens, Greece. doi: 10.1109/SSCI.2016.7850085.
8. Goñi-Moreno, A. & Amos, M. (2015). DiSCUS: A simulation platform for conjugation computing. In Calude, C.S. & Dineen, M.J. (Eds), *Unconventional and Natural Computation (UCNC 2015)*, Auckland, New Zealand, August 31-September 4, 2015. Springer, p.p. 181-191.
9. Richards, D. & Amos, M. (2014a) Evolving morphologies with CPPN-NEAT and a dynamic substrate. In *Proceedings of ALIFE 14, the Fourteenth International Conference on the Synthesis and Simulation of Living Systems*, July 30-August 2, 2014, New York, USA. Edited by Hiroki Sayama, John Rieffel, Sebastian Risi, René Doursat and Hod Lipson, p.p. 255-262, MIT Press. doi: 10.7551/978-0-262-32621-6-ch042.
10. Richards, D. & Amos, M. (2014b) Designing with gradients: bio-inspired computation for digital fabrication. In *Proceedings of the 34th Annual Conference of the Association for Computer Aided Design in Architecture (ACADIA 14: Design Agency)*, October 23-25, 2014, University of Southern California, Los Angeles, USA, p.p. 101-110.
11. Crossley, M., Nisbet, A. & Amos, M. (2013) Quantifying the impact of parameter tuning on nature-inspired algorithms. In *Advances in Artificial Life, ECAL2013*, September 2-6, 2013, Taormina, Italy, p.p. 925-932. MIT Press. doi: 10.7551/978-0-262-31709-2-ch138.
12. Crossley, M., Nisbet, A. & Amos, M. (2013) Fitness landscape-based characterisation of nature-inspired algorithms. In *Proceedings of the 11th International Conference on Adaptive and Natural Computing Algorithms (ICANNGA'13)*, Lausanne, Switzerland, April 4-6, 2013. Tomassini, M., Antonioni, A., Daolio, F. & Buesser, P. (Eds.) *Lecture Notes in Computer Science (LNCS)*, Volume 7824, p.p. 110-119, Springer.
13. Richards, D., Dunn, N. & Amos, M. (2012) An evo-devo approach to architectural design. *Proc. Genetic and Evolutionary Computation Conference (GECCO)*, July 7-11 2012, Philadelphia, USA, p.p. 569-576. ACM Press.
14. Jacobs, N. & Amos, M. (2012) NanoInfoBio: A case-study in interdisciplinary research. In Kettunen, J., Hyrkkänen, U. & Lehto, A. (Eds.) *Applied Research and Professional Education*, p.p. 289-309. Turku University of Applied Sciences.
15. Crossley, M. & Amos, M. (2011) SimZombie: a case-study in agent-based simulation construction. In *Agent and Multi-Agent Systems: Technologies and Applications*, *Lecture Notes in Artificial Intelligence (LNAI)* Vol. 6682, Springer, 2011, p.p. 514-523, doi:10.1007/978-3-642-22000-5_53.
16. Cecilia, J.M., Garcia, J.M, Ujaldon, M., Nisbet, A. & Amos, M. (2011) Parallelization strategies for ant colony optimization on GPUs. *Proceedings of the 25th IEEE/ACM International Parallel and Distributed Processing Symposium (IPDPS 2011)*, Anchorage, Alaska, USA, 16-20 May 2011, p.p. 334-341.
17. Coldridge, J. & Amos, M. (2010) Genetic algorithms and the art of Zen. *Proceedings of the IEEE Fifth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA)*, Liverpool, UK, 8-10 September 2010, Nagar, A.K, Thamburaj, R., Li, K. Tang, Z. and Li, R. (Eds.), p.p. 1417--1423.

18. Harding, P.J., Amos, M. & Gwynne, S. (2010) Prediction and mitigation of crush conditions in emergency evacuations. *Pedestrian and Evacuation Dynamics 2008*, Klingsch, W.W.F., Rogsch, C., Schadschneider, A. and Schreckenberg, M. (Eds.), p.p. 233-246, Springer. doi:10.1007/978-3-642-04504-2_18.
19. Goñi-Moreno, A. & Amos, M. (2010) Engineered microbial communication for population-level behaviour (abstract). *Artificial Life XII: Proceedings of the Twelfth International Conference on the Synthesis and Simulation of Living Systems*, Odense, Denmark, 19-23 August 2010, Harold Fellermann, Mark Dörr, Martin M. Hanczyc, Lone Ladegaard Laursen, Sarah Maurer, Daniel Merkle, Pierre-Alain Monnard, Kasper Stoy and Steen Rasmussen (Eds.), p.p. 184-185, MIT Press.
20. Amos, M. & Don, O. (2007) An ant-based algorithm for annular sorting. *Proc. IEEE Congress on Evolutionary Computation (CEC'07)*, Singapore, September 25-28, 2007, p.p. 142-148, IEEE Press.
21. Xu, Y-C., Xiao, R-B. & Amos, M. (2007) A novel genetic algorithm for the layout optimization problem. *Proc. IEEE Congress on Evolutionary Computation (CEC'07)*, Singapore, September 25-28, 2007, p.p. 3938-3942, IEEE Press.
22. Xu, Y-C., Xiao, R-B. & Amos, M. (2007a) Particle swarm algorithm for weighted rectangle placement. *Proc. Third International Conference on Natural Computation (ICNC'07)*, Haikou, China, August 24-27, 2007, Volume 4, p.p. 728-732, IEEE Press.
23. Owenson, G.G., Amos, M., Hodgson, D.A. & Gibbons, A. (1999) Molecular implementation of computational components. *Proc. Congress on Evolutionary Computation (CEC99)*, Washington D.C., USA, 6-9 July 1999, p.p. 967-971, IEEE.
24. Amos, M., Dunne, P.E. & Gibbons, A. (1998) DNA simulation of Boolean circuits. *Genetic Programming 1998: Proc. Third Annual Conference*, July 22-25, 1998, University of Wisconsin, Madison, Wisconsin. Koza, John R., Banzhaf, Wolfgang, Chellapilla, Kumar, Deb, Kalyanmoy, Dorigo, Marco, Fogel, David B., Garzon, Max H., Goldberg, David E., Iba, Hitoshi, & Riolo, Rick. (editors), p.p. 679-683, San Francisco, CA: Morgan Kaufmann.
25. Amos, M., Wilson, S., Hodgson, D.A., Owenson, G. & Gibbons, A. (1998) Practical implementation of DNA computations. *Proc. First International Conference on Unconventional Models of Computation*, 5-11 January 1998, Auckland, New Zealand. Discrete Mathematics & Theoretical Computer Science, C.S. Calude, J. Casti & M.J. Dinneen (Eds.), p.p. 1-18, Springer-Verlag, Singapore.
26. Amos, M., Gibbons, A. & Dunne, P.E. (1997) The complexity and viability of DNA computations. *Proc. Bio-computing and Emergent Computation (BCEC97)*, University of Skovde, Sweden, 1-2 Sep. 1997. Lundh, Olsson & Narayanan (Eds.) p.p. 165-173, World Scientific.
27. Devine, P., Paton, R. & Amos, M. (1997) Adaptation of evolutionary agents in computational ecologies. *Proc. Bio-computing and Emergent Computation (BCEC97)*, University of Skovde, Sweden, 1-2 Sep. 1997. Lundh, Olsson & Narayanan (Eds.) p.p. 66-75, World Scientific.
28. Gibbons, A., Amos, M. & David Hodgson (1996) Models of DNA computation. *Proc. Mathematical Foundations of Computer Science (MFCS)*, Cracow, Poland, 1996. Lecture Notes in Computer Science 1113, Penczek & Szalas (Eds.) p.p. 18-36, Springer-Verlag.
29. Amos, M., Gibbons, A. & David Hodgson (1996) Error-resistant implementation of DNA computations. *Proc. Second Annual Meeting on DNA Based Computers*, Princeton, NJ. DIMACS Series in Discrete Mathematics and Theoretical Computer Science. pp 151-162, Providence, RI: American Mathematical Society.
30. Zito, M., Pu, I., Amos, M. & Gibbons, A. (1996) RNC algorithms for the uniform generation of combinatorial structures. *Proc. Seventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA '96)*.

Chapters in books (single-authored)

1. Amos, M. (2012) DNA computing. *Encyclopædia Britannica*.
2. Amos, M. (2009) Bacterial computing. *Encyclopedia of Complexity and Systems Science*, Robert A. Meyers (Ed.), Part 2, p.p. 417-426, Springer New York. Doi:10.1007/978-0-387-30440-3_28.
3. Amos, M. (2009a) DNA computing. *Encyclopedia of Complexity and Systems Science*, Robert A. Meyers (Ed.), Part 4, p.p. 2089-2104, Springer New York. Doi:10.1007/978-0-387-30440-3_131.
4. Amos, M. (2001) Theoretical and experimental DNA computation. In *Current Trends in Theoretical Computer Science - Entering the 21st Century*, Gheorge Paun, Grzegorz Rozenberg & Arto Salomaa (Eds.), p.p. 614-630, World Scientific Publishing, Singapore, ISBN 9810244738.

Chapters in books (co-authored)

1. Amos, M. & Goñi-Moreno, A. (2018). Cellular Computing and Synthetic Biology. In *Computational Matter*, Stepney, S., Rasmussen, S. & Amos, M. (Eds.), Springer.
2. Richards, D. & Amos, M. (2016b). Regulatory representations in architectural design. In Iba, H. & Noman, N. (Eds.), *Evolutionary Computation in Gene Regulatory Network Research*, pp. 362-397, Wiley.
3. Richards, D. & Amos, M. (2016a). Encoding multi-materiality. In Grigoriadis, K. (Ed.), *Mixed Matter: A Multi-Material Design Compendium*, pp. 40-49, Jovis.
4. Amos, M., Calow, A., Jacobs, N., Jung, H.Y., Linton, T. & Verran, J. (2012) Manchester DIYbio. In Bowater, L. & Yeoman, K., *Science Communication: A Practical Guide for Scientists*, p.p. 250-251, Wiley-Blackwell.
5. Sant, P. & Amos, M. (2004) Models of recombination in ciliates. In *Computation in Cells and Tissues: Perspectives and Tools of Thought*, Paton, R., Bolouri, H., Holcombe, M., Parish, J. H., Tateson, R. (Eds.), p.p. 269-276. Collected volume in the Natural Computing Series, Springer-Verlag, ISBN 3-540-00358-4.
6. Amos, M. & Owenson, G. (2004) An introduction to cellular computing. In *Cellular Computing*, Amos, M. (Ed.), p.p. 1-10, Oxford University Press.
7. Dunne, P.E., Amos, M. & Gibbons, A. (1998) Boolean transitive closure in DNA. In *Computing with Bio-Molecules: Theory and Experiments*, George Paun (Ed.), p.p. 127-137, Springer-Verlag, Singapore.

Non-refereed papers/articles in journals, other publications or conferences

1. Amos, M. & Webster, J. (2021) How can we improve realism in crowd simulations? *SFPE Europe 22*.
2. Amos, M., Benichou, N., Gwynne, S. & Kinatader, M. (2019) NEED: Networking Activities for Enhanced Evacuation Drills - Roadmap for Enhanced Evacuation Drills. National Research Council of Canada Report A1-015092.1. doi: 10.4224/40001242.
3. Amos, M. (2014) Bot/Kettle. Afterword to *Certain Measures*, by Sean O'Brien. In Amos, M. & Page, R. (Eds.), *Beta-Life: Short Stories from an A-Life Future*, p.p. 171-174, Comma Press.
4. Amos, M. (2014) Dream Sequence. Afterword to *The Bactogarden*, by Sarah Schofield. In Amos, M. & Page, R. (Eds.), *Beta-Life: Short Stories from an A-Life Future*, p.p. 225-228, Comma Press.
5. Amos, M. & Calvert, J. (2012) Homegrown bio. Afterword to *Madswitch*, by Justina Robson. In Page, R. (Ed.), *Bio-Punk: Stories from the Far Side of Research*, p.p. 209-212, Comma Press.
6. Amos, M. (2011) 1952: Alan Turing and Morphogenesis. Afterword to Rogers, J., *Morphogenesis*. In *Litmus: Short Stories from Modern Science*, Page, R. (Ed.), Comma Press, p.p. 141-145.
7. Amos, M. (2010) Genesis machines: Computing with the code of life. *Manchester Memoirs: The Memoirs and Proceedings of the Manchester Literary and Philosophical Society* 146, p.p. 91-96.
8. Amos, M. (2006) A chip off Mother Nature's own hard drive. *Times Higher Education Supplement*, November 9 2006, p.p. 16-17.
9. Amos, M. & Hodgson, D.A. (Eds.) (2005) Selected papers from the *First International Symposium on Cellular Computing*. Special issue of *Natural Computing* 4:4, p.p. 293-451.
10. Amos, M. & Hodgson, D.A. (2005a) Preface. *Natural Computing* 4:4, p.p. 293-295. doi:10.1007/s11047-005-3671-x.
11. Amos, M. (2005) Cellular computing. *Proc. Montpellier Spring School on Modelling Complex Biological Systems in the Context of Genomics*, P. Amar, F. Kepes, F. Molina & V. Norris (Eds.), p.p. 3-6, ISBN 2-86883-947-9.
12. Amos, M., Sant, P. & Gibbons, A. (2000) Report on the Sixth International Meeting on DNA Based Computers, Leiden, The Netherlands, 13-17 June 2000. *Bulletin of the EATCS* 72, 213-214.
13. Amos, M. & Dunne, P.E. (2000) Report on the Sixteenth Annual Meeting of the British Colloquium for Theoretical Computer Science (BCTCS16), 10-12 April 2000 Liverpool, United Kingdom. *Bulletin of the EATCS* 72, 203-213.
14. Amos, M. (1999) Review of DNA Based Computers III, Harvey Rubin & David Harlan Wood (Eds.). *ACM SIGACT News* 30:4, 10-12.
15. Amos, M. & Kari, L. (1998) Report on the Ongoing Workshop on DNA Computing, June 29 - July 3 1998, Leiden, The Netherlands. *Bulletin of the EATCS* 66, 203-204.
16. Amos, M. (1996) A new model of DNA computation. 12th British Colloquium on Theoretical Computer Science (BCTCS), University of Kent, UK, 1-4 Apr. 1996. Abstract in *Bulletin of the EATCS* 61.
17. Pu, I., Zito, M., Amos, M. & Gibbons, A. (1995) NC and RNC algorithms for the uniform generation of paths and trees in graphs. 11th British Colloquium on Theoretical Computer Science (BCTCS), University of Swansea, UK, 3-5 April, 1995. Abstract in *Bulletin of the EATCS* 58.

REFEREES

Available on request.