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Qualifications

Computer Science, PhD, DNA Computing, University of Warwick
1993 → 1997

Award Date: 3 Sept 1997

Computer Science, BSc (Hons), Computer Science (including a period of industrial training), Coventry University
1989 → 1993

Award Date: 1 Sept 1993

Fellow of the British Computer Society, FBCS

Employment

Professor

Computer Information Sciences Department
Northumbria University
3 Sept 2018 → present

Research outputs

A dynamic state-based model of crowds

Amos, M., Gainer, P., Gwynne, S. & Templeton, A., 1 Jul 2024, In: *Safety Science*. 175, 9 p., 106522.

Empirical evolution of an evacuation reporting template

Baig, K., Amos, M., Gwynne, S., Bénichou, N. & Kinateder, M., 1 Jul 2024, In: *Safety Science*. 175, 23 p., 106496.

Crowd-Sourced Identification of Characteristics of Collective Human Motion

Amos, M. & Webster, J., 1 Nov 2022, In: *Artificial Life*. 28, 4, p. 401-422 22 p.

J-POP: Japanese Puzzles as Optimization Problems

Lloyd, H., Crossley, M., Sinclair, M. & Amos, M., Sept 2022, In: *IEEE Transactions on Games*. 14, 3, p. 391-402 12 p.

PACO-VMP: Parallel Ant Colony Optimization for Virtual Machine Placement

Peake, J., Amos, M., Costen, N., Masala, G. & Lloyd, H., 1 Apr 2022, In: *Future Generation Computer Systems*. 129, p. 174-186 13 p.

Identification of Lifelike Characteristics of Human Crowds Through a Classification Task

Webster, J. & Amos, M., 19 Jul 2021, *ALIFE 2021: The Conference on Artificial Life*. Cambridge, US: The MIT Press, 10 p. 54

Where Drills Differ from Evacuations: A Case Study on Canadian Buildings

Kinateder, M., Ma, C., Gwynne, S., Amos, M. & Benichou, N., 1 Mar 2021, In: *Safety Science*. 135, 10 p., 105114.

Solving Sudoku with Ant Colony Optimization

Lloyd, H. & Amos, M., 1 Sept 2020, In: *IEEE Transactions on Games*. 12, 3, p. 302-311 10 p.

The Future of Evacuation Drills: Assessing and Enhancing Evacuee Performance

Gwynne, S., Amos, M., Kinateder, M., Benichou, N., Boyce, K., van der Wal, N. & Ronchi, E., 1 Sept 2020, In: Safety Science. 129, 104767.

A Turing test for crowds

Webster, J. & Amos, M., 22 Jul 2020, In: Royal Society Open Science. 7, 7, 200307.

Pathways to cellular supremacy in biocomputing

Grozinger, L., Amos, M., Goroehowski, T., Carbonell, P., Oyarzun, D., Stoof, R., Fellermann, H., Zuliani, P., Tas, H. & Goñi-Moreno, A., Dec 2019, In: Nature Communications. 10, 1, 11 p., 5250.

Scaling Techniques for Parallel Ant Colony Optimization on Large Problem Instances

Peake, J., Amos, M., Yiapanis, P. & Lloyd, H., 13 Jul 2019, *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '19): July 13–17, 2019, Prague, Czech Republic*. New York, NY, USA: ACM, p. 47-54 8 p.

Solving Nurikabe with Ant Colony Optimization

Amos, M., Crossley, M. & Lloyd, H., 13 Jul 2019, *GECCO 2019 Companion - Proceedings of the 2019 Genetic and Evolutionary Computation Conference Companion: July 13–17, 2019, Prague, Czech Republic*. New York, NY, USA: ACM, p. 129-130 2 p.

Void Reduction in Self-Healing Swarms

Eliot, N., Kendall, D., Brockway, M., Moon, A. & Amos, M., Jul 2019, *ALIFE 2019: The 2019 Conference on Artificial Life*. Fellermann, H., Bacardit, J., Goñi-Moreno, Á. & Fuchsli, R. M. (eds.). London: The MIT Press, Vol. 31. p. 87-94 8 p.

A Glossary for Research on Human Crowd Dynamics

Adrian, J., Amos, M., Bode, N., Baratchi, M., Beermann, M., Boltes, M., Corbetta, A., Dezechache, G., Drury, J., Fu, Z., Geraerts, R., Gwynne, S., Hofinger, G., Hunt, A., Kanters, T., Kneidl, A., Konya, K., Köster, G., Küpper, M., Michalareas, G., & 19 others Neville, F., Ntontis, E., Reicher, S., Ronchi, E., Schadschneider, A., Seyfried, A., Shipman, A., Sieben, A., Spearpoint, M., Sullivan, G. B., Templeton, A., Toschi, F., Yücel, Z., Zanolungo, F., Zuriguel, I., Van Der Wal, N., Van Schadewijk, F., Von Krüchten, C. & Wijermans, N., 31 Mar 2019, In: Collective Dynamics. 4, 13 p., A19.

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Dynamical task switching in cellular computers

Goni-Moreno, A., de la Cruz, F., Rodriguez-Paton, A. & Amos, M., 26 Jan 2019, In: Life. 9, 1, 14.

Vectorized candidate selection for parallel ant colony optimization

Peake, J., Amos, M., Yiapanis, P. & Lloyd, H., 6 Jul 2018, *GECCO '18 Proc. Genetic and Evolutionary Computation Conference Companion (GECCO '18), July 15-19 2018, Kyoto, Japan: Proceedings of the Genetic and Evolutionary Computation Conference Companion*. Acuirre, H. (ed.). ACM, p. 1300-1306 7 p.

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Cellular computing and synthetic biology

Amos, M. & Goñi-Moreno, A., 2018, *Natural Computing Series*. Springer, p. 93-110 18 p. (Natural Computing Series).

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Stepney, S. (ed.), Rasmussen, S. (ed.) & Amos, M. (ed.), 2018, Springer. (Natural Computing Series)

Analysis of independent roulette selection in parallel ant colony optimization

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A highly parallelized and vectorized implementation of Max-Min Ant System on Intel Xeon Phi

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An Implementation-Focused Bio/Algorithmic Workflow for Synthetic Biology

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Dynamic load balancing on heterogeneous clusters for parallel ant colony optimization

Llanes, A., Cecilia, J. M., Sanchez, A., Garcia, J. M., Amos, M. & Ujaldon, M., Mar 2016, In: Cluster Computing. 19, 1, p. 1-11

Regulatory representations in architectural design

Richards, D. & Amos, M., Mar 2016, *Evolutionary Computation in Gene Regulatory Network Research*. Wiley, p. 362-397

Encoding multi-materiality

Richards, D. & Amos, M., 2016, *Mixed Matter: A Multi-Material Design Compendium*. Jovis Verlag, p. 40-49

Bacterial computing with engineered populations

Amos, M., Axmann, I. M., Bluethgen, N., de la Cruz, F., Jaramillo, A., Rodriguez-Paton, A. & Simmel, F., 28 Jul 2015, In: Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences. 373, 2046, 2014.0218.

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Designing with gradients: bio-inspired computation for digital fabrication

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Monsters, microbiology and mathematics: The epidemiology of a zombie apocalypse

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Population-based microbial computing: a third wave of synthetic biology?

Amos, M., 2014, In: International Journal of General Systems. 43, 7, p. 770-782 13 p.

Fitness landscape-based characterisation of nature-inspired algorithms

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Multicellular Computing Using Conjugation for Wiring
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Enhancing GPU parallelism in nature-inspired algorithms
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Manchester DIYBio: A case study

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Quantifying the Impact of Parameter Tuning on Nature-Inspired Algorithms

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TRUCE: A coordination action for unconventional computation

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Bacterial computing

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A reconfigurable NAND/NOR genetic logic gate

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A genetic algorithm for the Zen Puzzle Garden game

Amos, M. & Coldridge, J., Sept 2012, In: Natural Computing. 11, 3, p. 353-359 7 p.

An evo-devo approach to architectural design

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Continuous computation in engineered gene circuits

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Mutual information for the detection of crush

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Parallelization strategies for Ant Colony Optimisation on GPUs

Cecilia, J. M., García, J. M., Ujaldón, M., Nisbet, A. & Amos, M., 1 Sept 2011, *2011 IEEE International Symposium on Parallel and Distributed Processing, Workshops and PhD Forum, IPDPSW 2011*. IEEE, p. 339-346 8 p. 6008849

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Biological and chemical information technologies

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Genetic algorithms and the art of Zen

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Wave propagation in filamental cellular automata

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Bacterial Computing

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DNA computing

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Swarm-based spatial sorting

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An ant-based algorithm for annular sorting

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A novel genetic algorithm for the Layout Optimization Problem

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Particle swarm algorithm for weighted rectangle placement

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Bacterial self-organisation and computation

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Going back to our roots: second generation biocomputing

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Theoretical and Experimental DNA Computation

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Cellular Computing

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Models of recombination in ciliates

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DNA computation

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