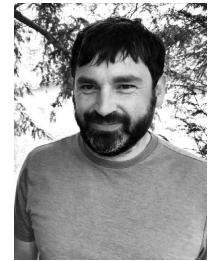


Joshua Knowles
Honorary
MSM General



Overview

Joshua Knowles is a research scientist at Schlumberger Cambridge Research Ltd, in Cambridgeshire, UK.

Current Employment

Honorary Professor

Honorary
MSM General
The University of Manchester
24 Jan 2024 → present

Principal Scientist

Schlumberger Cambridge Research
Cambridge, United Kingdom
11 Apr 2022 → present

Honorary Fellow

University of Birmingham
Birmingham, United Kingdom
2 Apr 2019 → present

Previous Employment

Senior Researcher

Invenia Labs
Cambridge, United Kingdom
30 Jun 2020 → 15 Mar 2022

Research outputs (50 most recent)

Towards Deep Optimization in Operations Scheduling

Danardya, L., Knowles, J. & Allmendinger, R., 14 Jul 2025, *Genetic and Evolutionary Computation Conference (GECCO'25), July 14 - 18, 2025. Malaga, Spain.*

Bayesian Optimization with Setup Switching Cost

Pricopie, S., Allmendinger, R., López-Ibáñez, M., Fare, C., Benatan, M. & Knowles, J., 14 Jul 2024, p. 103-104. 2 p.

An Adaptive Approach to Bayesian Optimization with Setup Switching Costs

Pricopie, S., Allmendinger, R., López-Ibáñez, M., Fare, C., Benatan, M. & Knowles, J., 31 May 2024, (Accepted/In press) *Parallel Problem Solving from Nature - PPSN XVIII.*

Inventing and Assessing Simple Heuristics for Bidding in Wholesale Electricity Markets

Atkinson, J., Allmendinger, R. & Knowles, J., 30 Aug 2023, *Operations Research Proceedings 2022*. Springer Nature Netherlands, p. 245-251 7 p. (Lecture Notes in Operations Research; vol. Part F3789)(International Conference on Operations Research).

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Cooperative Multi-Agent Search on Endogenously-Changing Fitness Landscapes

Lim, C. W., Allmendinger, R., Knowles, J., Alhosani, A. & Bleda, M., 28 Jun 2022.

Deep Optimisation: Transitioning the Scale of Evolutionary Search by Inducing and Searching in Deep Representations

Caldwell, J., Knowles, J., Thies, C., Kubacki, F. & Watson, R., 15 May 2022, In: SN Computer Science. 3, 3, 253.

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Shavarani, S. M., López-Ibáñez, M. & Knowles, J., 26 Jun 2021, *GECCO '21: Genetic and Evolutionary Computation Conference Proceedings*. Association for Computing Machinery, p. 457-465 9 p. (GECCO 2021 - Proceedings of the 2021 Genetic and Evolutionary Computation Conference).

Deep Optimisation: Multi-scale Evolution by Inducing and Searching in Deep Representations

Caldwell, J., Knowles, J., Thies, C. & Kubacki, F., 2021, *Applications of Evolutionary Computation - 24th International Conference, EvoApplications 2021, Held as Part of EvoStar 2021, Proceedings*. Castillo, P. A. & Jiménez Laredo, J. L. (eds.). Springer Nature, p. 506-521 16 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 12694 LNCS).

Deep Optimisation: Solving Combinatorial Optimisation Problems using Deep Neural Networks

Caldwell, J. R., Watson, R. A., Thies, C. & Knowles, J. D., 2 Nov 2018, 9 p.

An Improved and More Scalable Evolutionary Approach to Multiobjective Clustering

Garza-Fabre, M., Handl, J. & Knowles, J., 2018, In: IEEE Transactions on Evolutionary Computation. 22, 4, p. 515 - 535

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Shir, O. M., Bäck, T., Knowles, J. & Allmendinger, R., 15 Jul 2017, *GECCO 2017 - Proceedings of the Genetic and Evolutionary Computation Conference Companion*. Association for Computing Machinery, p. 828-851 24 p. (GECCO 2017 - Proceedings of the Genetic and Evolutionary Computation Conference Companion).

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Morar, M. T., Knowles, J. & Sampaio, S., 1 May 2017, (Accepted/In press) *Data Science meets Optimization Workshop: CEC2017 & CPAIOR 2017: DSO 2017*. 6 p.

Editorial

Brockhoff, D., Knowles, J., Naujoks, B. & Sindhya, K., 1 Mar 2017, In: Computers and Operations Research. 79, p. 264-265 2 p.

Editorial: Special issue on understanding complexity in multiobjective optimization

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A new reduced-length genetic representation for evolutionary multiobjective clustering

Garza-Fabre, M., Handl, J. & Knowles, J., 2017, p. 236-251. 17 p.

On using decision maker preferences with ParEGO

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Simheuristics for the multiobjective nondeterministic firefighter problem in a time-constrained setting

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Generating, Maintaining and Exploiting Diversity in a Memetic Algorithm for Protein Structure Prediction

Garza-Fabre, M., Kandathil, S. M., Handl, J., Knowles, J. & Lovell, S. C., 2016, In: *Evolutionary Computation*.

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Miller, S. & Knowles, J., 2016, *Unconventional Computation and Natural Computation*. p. 62-74 13 p.

The emergence of cooperation in public goods games on randomly growing dynamic networks

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Garza-Fabre, M., Kandathil, S. M., Handl, J., Knowles, J. & Lovell, S. C., 11 Jul 2015, *GECCO 2015 - Companion Publication of the 2015 Genetic and Evolutionary Computation Conference*. Silva, S. (ed.). Association for Computing Machinery, p. 935-938 4 p. (GECCO 2015 - Companion Publication of the 2015 Genetic and Evolutionary Computation Conference).

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Dunn, W., Lin, W., Broadhurst, D., Begley, P., Brown, M., Zelena, E., Vaughan, A., Halsall, A., Harding, N., Knowles, J., Francis-McIntyre, S., Tseng, A., Ellis, D., O'Hagan, S., Aarons, G., Benjamin, B., Chew-Graham, S., Moseley, C., Potter, P. & Winder, C. & 16 others, Potts, C., Thornton, P., McWhirter, C., Zubair, M., Pan, M., Burns, A., Cruickshank, K., Jayson, G., Purandare, N., Wu, F., Finn, J., Haselden, J., Nicholls, A., Wilson, I., Goodacre, R. & Kell, D., Feb 2015, In: *Metabolomics*. 11, 1, p. 9-26 18 p.

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Handl, J. & Knowles, J., 1 Jan 2015, *Handbook of Cluster Analysis*. Hennig, C., Meila, M., Murtagh, F. & Rocci, R. (eds.). CRC Press and Balkema, p. 419-440 22 p.

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MUSCLE: Automated Multi-objective Evolutionary Optimisation of Targeted LC-MS/MS Analysis

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Knowles, J., Allmendinger, R., Datta, R. (Editor) & Deb, K. (Editor), 2014, *Evolutionary Constrained Optimization*. Springer Nature

Hellinger Distance Trees for Imbalanced Streams

Lyon, R., Brooke, J., Knowles, J. & Stappers, B., 2014, *22nd International Conference on Pattern Recognition (ICPR 2014)*.

Meta-Decoders: Self-Reproducing Genotype-Phenotype Maps

Webb, A. & Knowles, J., 2014, *ALIFE 14: The Fourteenth International Conference on the Synthesis and Simulation of Living Systems*.

Studying the evolvability of self-encoding genotype-phenotype maps

Webb, A. M. & Knowles, J., 2014, *Artificial Life 14 - Proceedings of the 14th International Conference on the Synthesis and Simulation of Living Systems, ALIFE 2014*. Sayama, H., Rieffel, J., Risi, S., Doursat, R. & Lipson, H. (eds.). MIT Press Journals, p. 79-86 8 p. (Artificial Life 14 - Proceedings of the 14th International Conference on the Synthesis and Simulation of Living Systems, ALIFE 2014).

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Comparing multi-objective and threshold-moving ROC curve generation for a prototype-based classifier

Aler, R., Handl, J. & Knowles, J. D., 2013, *GECCO 2013 - Proceedings of the 2013 Genetic and Evolutionary Computation Conference/GECCO - Proc. Genet. Evol. Comput. Conf.*. Association for Computing Machinery, p. 1029-1036 7 p.

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Handl, J. & Knowles, J., 2013, *host publication*. Springer Nature, Vol. 7811. p. 543-557 15 p.

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Allmendinger, R. & Knowles, J., 2013, *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)/Lect. Notes Comput. Sci.*. Springer Nature, Vol. 7811. p. 6-20 14 p. (Lecture Notes in Computer Science, Volume 7811).

On handling ephemeral resource constraints in evolutionary search

Allmendinger, R. & Knowles, J., 2013, In: *Evolutionary Computation*. 21, 3, p. 497-531 34 p.

Predicting skill from gameplay input to a first-person shooter

Buckley, D., Chen, K. & Knowles, J., 2013, *IEEE Conference on Computational Intelligence and Games, CIG/IEEE Conf. Comput. Intell. Games, CIG*. U.S.A.: IEEE

Systematic construction of algorithm portfolios for a maintenance scheduling problem

Almakhlafi, A. & Knowles, J., 2013, *2013 IEEE Congress on Evolutionary Computation, CEC 2013/IEEE Congr. Evol. Comput., CEC*. IEEE, p. 245-252 7 p.

Exploiting Genomic Knowledge in Optimising Molecular Breeding Programmes: Algorithms from Evolutionary Computing

O'Hagan, S., Knowles, J. & Kell, D. B., 21 Nov 2012, In: *PLoS ONE*. 7, 11, e48862.

The dual role of fragments in fragment-assembly methods for de novo protein structure prediction

Handl, J., Knowles, J., Vernon, R., Baker, D. & Lovell, S. C., Feb 2012, In: *Proteins: Structure, Function and Bioinformatics*. 80, 2, p. 490-504 14 p.

Selected aspects of natural computing

Corne, D. W., Deb, K., Knowles, J. & Yao, X., 1 Jan 2012, *Handbook of Natural Computing*. Springer Nature, Vol. 4-4. p. 1737-1801 65 p.

Benchmarks for maintenance scheduling problems in power generation

Almakhlafi, A. & Knowles, J., 2012, *2012 IEEE Congress on Evolutionary Computation, CEC 2012/IEEE Congr. Evol. Comput., CEC*. IEEE

Clustering criteria for use in multiobjective clustering

Handl, J. & Knowles, J., 2012, *Parallel Problem Solving from Nature - PPSN XII*. Springer Nature, p. 32-41 10 p.

Clustering criteria in multiobjective data clustering

Handl, J. & Knowles, J., 2012, *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)/Lect. Notes Comput. Sci.*. Berlin/Heidelberg: Springer Nature, Vol. 7492. p. 32-41 9 p.

Learning in Multiobjective Optimization (Dagstuhl Seminar 12041)

Knowles, J. D., Greco, S. (Editor), Miettinen, K. (Editor) & Zitzler, E. (Editor), 2012, *Leibniz-Zentrum für Informatik*. 50 p. (Dagstuhl Reports)

Projects

Extend the functionality of an existing product platform by incorporating an algorithm to enable customers to develop optimised bioprocesses and reduce product costs.

Allmendinger, R. (PI) & Knowles, J. (Col)

1/01/17 → 31/12/18

Prizes**ACM GECCO Impact Award**

Knowles, J. (Recipient), 1 Jun 2017

David Phillips Fellowship

Knowles, J. (Recipient), 1 Oct 2003

IEEE Transactions on Evolutionary Computation Outstanding Paper Award

Knowles, J. (Recipient), 1 Jun 2006

IEEE Transactions on Evolutionary Computation Outstanding Paper Award

Knowles, J. (Recipient), 1 Jun 2008

Marie Skłodowska-Curie Fellowship

Knowles, J. (Recipient), 1 Oct 2001