

DR. SHAHIN ROSTAMI

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Shahin is a Data Scientist with Software Engineering skills that have been honed over two decades. He has multidisciplinary experience in both industry and academia, where he has demonstrated innovation and leadership.

He has authored many books and peer-reviewed publications on the subjects of Data Science, Visualisation, and Evolutionary Computation. He is the founder of *Plotapi.com* (an API) and *PlotPanel.com* (an app), both of which enable the creation of engaging interactive visualisations that have been used in publications by academia, government, and industry.



ACADEMIC QUALIFICATIONS & RECOGNITIONS

PhD, Artificial Intelligence *Dec 2014*
Manchester Metropolitan University, UK
Preference Driven Multi-Objective Evolutionary Computation of Neural Networks for Concealed Weapon Detection.

Visiting Scholar *May 2021*
Bournemouth University, UK

Senior Teaching Fellow *Dec 2017*
Higher Education Academy
D3 of the UK Professional Standards Framework.

PGCAP, Teaching & Learning *Jan 2012*
Manchester Metropolitan University, UK

BSc (Hons), Computing *Aug 2010*
Manchester Metropolitan University, UK
First Class.

EMPLOYMENT HISTORY

Founder & Principal Consultant *Mar 2019–Present*
Polyra Limited, UK
Digital Health, Defence. SaaS Products: Plotapi, PlotPanel.

Head of Data Science *Feb 2018–Aug 2021*
Xim Limited (Digital Health), UK
Formerly Lead Data Science Consultant. Innovation, R&D leadership, Data science growth strategy, Technical oversight.

Senior Academic in Data Science *Aug 2014–Mar 2021*
Bournemouth University, UK
Formerly Lecturer (Academic). Research leadership, Funded projects, Course design & leadership, Staff mentor.

Associate Lecturer *Sep 2011–Aug 2014*
Manchester Metropolitan University, UK
Delivering Software Engineering and Embedded Systems.

Software Engineer *Mar 2010–Dec 2010*
Building Blocks (part of Dept), UK
Olympics 2012 ambassador system, UKRI output system.

Software Engineer *Jun 2008–Feb 2010*
Creative Lynx (Havas Lynx Group), UK
Engineering software with a focus on innovation.

SELECTED COMPETENCIES

Leadership & Management

Mentoring Innovation Bidding Research Estimation
Interviews Performance Reviews Scrum Kanban

Programming Languages

Python C# JavaScript MATLAB Rust Java C/C++
LaTeX Unix shell XSLT

Databases

SQLite PostgreSQL MySQL/MariaDB Microsoft SQL
Oracle (SQL, PL/SQL) Redis

Technical Software

Jupyter Notebook TensorFlow Keras SciPy ecosystem
(NumPy, Pandas, Scikit-learn) Plotly+Dash D3.js htmx
FastAPI Django Docker AWS Unity Tailwind CSS

SELECTED CONSULTING HISTORY

Artificial Intelligence Advisor *Jun 2021–Jan 2022*
Digital Health Company, UK
Experiment design, Technology roadmap, Strategy; Risk.

Data Visualisation Consultant *Apr 2021–May 2021*
Medical University of Vienna, Austria
Custom visualisation for time series from multiple organs.

Machine Learning Consultant *Dec 2019–Jan 2020*
DSTL Project, Defence Company, UK
Modelling multi-sensor data to detect unexploded ordnance.

Data Science Consultant *Sep 2019–Feb 2020*
Digital Health Company, UK
Modelling EEG & CBF data to diagnose cognitive impairment.

Curriculum Consultant *May 2020–July 2020*
Strapi Inc., USA
Design & production of training videos for enterprise offering.

Data Science Consultant *Mar 2019–Sep 2019*
Cardiff University, Swansea University, & Digital Health Company, UK
Modelling breath biomarkers to diagnose & monitor diabetes.

PUBLISHED SOFTWARE

PlotPanel *Data Visualisation SaaS (App)*
<https://plotpanel.com>

Producing engaging interactive visualisations that have been used in publications by academia, government, and industry.

Plotapi *Data Visualisation SaaS (API)*
<https://plotapi.com>

Producing engaging interactive visualisations that have been used in publications by academia, government, and industry.

Chord Pro ☆ 266 *Python Package, Rust Crate*
<https://github.com/shahinrostami/chord>
https://github.com/shahinrostami/chord_rs
An API for creating interactive Chord Diagrams.

Purple Please ☆ 55 *Jupyter Lab Extension*
<https://github.com/shahinrostami/theme-purple-please>
A Jupyter Lab extension providing the Purple Please theme

PUBLISHED TEXTBOOKS

Practical Evolutionary Algorithms *Dec 2019*
<https://datacrayon.com/shop>

A book on evolutionary algorithms that teaches you the concepts and how they're implemented in practice.

Data Analysis with Rust Notebooks *Mar 2020*
A book on data analysis with rust notebooks that teaches you the concepts and how they're implemented in practice.

Data is Beautiful *Sep 2020*
A practical book on data visualisation that shows you how to create visualisations that are engaging and beautiful.

Visualisation with D3.js *Jan 2021*
A book on visualisation with D3.js that shows you how to create visualisations from the ground up.

PHD SUPERVISIONS

1. Mohammad Naiseh, Bournemouth University, Thesis: "Explainable AI Interfaces to enhance trust calibration", 3rd supervisor. Completed.
2. Waqas Jamil, Bournemouth University, Thesis: "Sketches and Online Learning", 2nd supervisor. Completed.
3. Mohammed Alqurashi, Bournemouth University, Thesis: "An IDS for IoT Enabled Devices", 2nd supervisor. Completed.
4. Daniel Dimanov, Bournemouth University, Thesis: "Multi-Objective Concealed Weapon Detection", 1st supervisor. Ongoing.
5. Kevin Wilson, Bournemouth University, Thesis: "Many-Objective Evolutionary Computation", 1st supervisor. Ongoing.

REFEREED JOURNAL ARTICLES & REPORTS

1. Neri, F., & Rostami, S. (2021). Generalised Pattern Search Based on Covariance Matrix Diagonalisation. *SN Computer Science*, 1-22.
2. Rostami, S., Neri, F., & Gyaurski, K. (2020). On Algorithmic Descriptions and Software Implementations for Multi-objective Optimisation: A Comparative Study. *SN Computer Science*, 1(5), 1-23.
3. Katos, V., & Rostami, S. et al (2019). STATE OF VULNERABILITIES 2018/2019 - Analysis of Events in the life of Vulnerabilities. European Union Agency for Cybersecurity (ENISA).
4. Rostami, S., & Neri, F. (2017). A fast hypervolume driven selection mechanism for many-objective optimisation problems. *Swarm and evolutionary computation*, 34, 50-67.
5. Rostami, S., Neri, F., & Epitropakis, M. (2017). Progressive preference articulation for decision making in multi-objective optimisation problems. *Integrated Computer-Aided Engineering*, 24(4), 315-335.
6. Tsimperidis, I., Rostami, S., & Katos, V. (2017). Age detection through keystroke dynamics from user authentication failures. *International Journal of Digital Crime and Forensics (IJDCF)*, 9(1), 1-16.
7. Rostami, S., & Neri, F. (2016). Covariance matrix adaptation pareto archived evolution strategy with hypervolume-sorted adaptive grid algorithm. *Integrated Computer-Aided Engineering*, 23(4), 313-329.
8. Rostami, S., & Shenfield, A. (2017). A multi-tier adaptive grid algorithm for the evolutionary multi-objective optimisation of complex problems. *Soft Computing*, 21(17), 4963-4979.
9. Rostami, S., O'Reilly, D., Shenfield, A., & Bowring, N. (2015). A novel preference articulation operator for the evolutionary multi-objective optimisation of classifiers in concealed weapons detection. *Information Sciences*, 295, 494-520.

REFEREED CONFERENCE PROCEEDINGS

1. Rostami, S., Kleszcz, A., Dimanov, D., & Katos, V. (2020, October). A Machine Learning Approach to Dataset Imputation for Software Vulnerabilities. In *International Conference on Multimedia Communications, Services and Security* (pp. 25-36). Springer, Cham.
2. Tsimperidis, I., Rostami, S., Wilson, K., & Katos, V. (2020, September). User Attribution Through Keystroke Dynamics-Based Author Age Estimation, *International Networking Conference* (pp. 47-61). Springer, Cham.
3. Neri, F., & Rostami, S. (2020, April). A Local Search for Numerical Optimisation Based on Covariance Matrix Diagonalisation, *International Conference on the Applications of Evolutionary Computation (Part of EvoStar)* (pp. 3-19). Springer, Cham.
4. Dimanov, D. and Rostami, S. (2019). KOSI- Key Object Detection for Sentiment Insights, 19th annual UK workshop on computational intelligence, 4-6 September 2019, Portsmouth, UK.
5. Stubbs, R. and Rostami, S. (2019). Hyper-parameter Optimisation by Restrained Stochastic Hill Climbing, UKCI 2019: 19th annual UK workshop on computational intelligence, 4-6 September 2019, Portsmouth, UK.
6. Saul, M.A. and Rostami, S. (2018). A Comparison of Resampling Techniques for Pattern Classification in Imbalanced Data-Sets, UKCI 2018: 18th annual UK workshop on computational intelligence, 5-7 September 2018, Nottingham, UK.
7. Wilson, K. and Rostami, S. (2018). On the Integrity of Performance Comparison for Evolutionary Multi-objective Optimisation Algorithms, UKCI 2018: 18th annual UK workshop on computational intelligence, 5-7 September 2018, Nottingham, UK.
8. Nava, T., Rostami, S. and Smyth, B. (2018). Knowing the unknown: visualising consumption blind-spots in recommender systems. In: *SAC 2018 The 33rd ACM/SIGAPP Symposium On Applied Computing*, 9-13 April 2018, Pau, France.
9. Shenfield, A., & Rostami, S. (2017). Multi-objective evolution of artificial neural networks in multi-class medical diagnosis problems with class imbalance. *2017 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*.
10. Shenfield, A., & Rostami, S. (2015). A multi objective approach to evolving artificial neural networks for coronary heart disease classification. *2015 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology*, Niagara Falls, ON.
11. Rostami, S., Shenfield, A., Sigurnjak, S., & Fakorede, O. (2015). Evaluation of mental workload and familiarity in human computer interaction with integrated development environments using single-channel EEG. In *Proceedings of PPIG 2015-26th Annual Workshop*.
12. Rostami, S., Delves, P., & Shenfield, A. (2013). Evolutionary Multi-Objective Optimisation of an Automotive Active Steering Controller. In *Science and Engineering Research Symposium* (pp. 1-3).
13. Rostami, S., & Shenfield, A. (2012, September). Cma-paes: Pareto archived evolution strategy using covariance matrix adaptation for multi-objective optimisation. In *Computational Intelligence (UKCI), 2012 12th UK Workshop on* (pp. 1-8). IEEE.
14. Rostami, S., & Shenfield, A. (2012). Adaptive Grid Archiving Combined with the Covariance Matrix Adaptation Evolution Strategy.