

Joseph Webb

I like pushing the boundaries on what can be simulated, and then making it run fast.

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EDUCATION

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|---|------------------------------|
| University of Oxford , Worcester College | Sep 2024 – Present |
| Master of Science in Mathematical Modelling and Scientific Computing | |
| The Masters in Mathematical Sciences Scholar , awarded a scholarship by Worcester College covering tuition fees, and received the MMSC bursary for academic excellence and performance in interview. | |
| University of Warwick | Sep 2021 – Jun 2024 |
| Bachelor of Science in Mathematics and Physics | First Class Honours ↗ |
| Founder and president of <i>The Poincaré Project</i> which produced a yearly magazine focussed on the intersection of mathematics, physics, and computer science. | |





EXPERIENCE

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| University of Warwick, Department of Physics | May 2023 – Present |
| URSS Researcher | Coventry, UK |
| Received funding to carry out a self-directed machine learning research project. | |
| Self-Employed | Jan 2017 – Aug 2021 |
| Electrical Tester | London, UK |
| Contracted electrical testing of banks and data centres in Central London. | |
| UK Government, Department of Digital, Culture, Media & Sport | Jun 2021 |
| Information Technology Support Technician | London, UK |
| Provided 1st- and 2nd-line support and produced technical documentation. | |
| The Economist | Feb 2020 – Sep 2020 |
| Information Technology Operations Analyst | London, UK |
| Created scheduled scripts to automate server tasks, and built software to optimise resolution of issues. | |
| Selfridges & Co. | Feb 2019 – Oct 2019 |
| Computer Services Analyst | London, UK |
| Improved our rollout speed by developing a PowerShell GUI application to perform device management. | |

PREPRINTS, ARTICLES & POSTER SESSIONS

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| J. Webb , R. Beanland, R. A. Römer. 2024. “Large-Angle Convergent-Beam Electron Diffraction Patterns via Conditional Generative Adversarial Networks” | 2024 |
| Poincaré Magazine, Issue 02: “How to Win Games with Quantum Strategies” ↗ | 2023 |
| Poincaré Magazine, Issue 01: “A Walk in the Quantum: Reinventing a World-Changing Algorithm” ↗ | 2022 |
| Institute of Physics: Theory of Condensed Matter – AI’s Bridge Between Structure and Pattern | 13th June 2024 |

OPEN-SOURCE PROJECTS

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|  AI Diffraction: A machine learning approach to electron diffraction, built on NVIDIA's pix2pixHD. | |
|  Quantum Walk: A simulator for quantum walks on directed graphs to emulate and improve the classical PageRank algorithm, and an implementation on lattices to compare classical and quantum information processing. | |
|  Fractal Explorer: An interactive explorer utilising CUDA processing to investigate any fractal formula. | |
|  Project Euler Solutions: Solving Project Euler problems with extremely efficient and optimised code. | |

SKILLS

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| Concepts: Computational Physics, High-Performance Computing, Machine Learning, Numerical Analysis, Numerical Linear Algebra, Optimisation, Data Analytics and Visualisation |
| Programming: Python, Julia, Bash, Fortran, C, Matlab, PowerShell, SQL |
| Tools and Technologies: Git, Slurm, MPI, CUDA, PyTorch, TensorFlow, NumPy, Numba, SciPy, Pandas, Matplotlib, LaTeX, Arduino |