

Joseph Webb

Mathematician, Physicist, Programmer

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EDUCATION

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 *The Poincaré Project* which produced a yearly magazine focussed on the intersection of mathematics, physics, and computer science.

EXPERIENCE

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

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

- 🔗 **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

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