Maxwell Catmur

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# Profile

Aspiring Algorithmic Trader with strong Python and quantitative analysis from an MPhys. Built and optimised algorithms, performed large-scale simulations and data analysis; eager to learn HFT, liquidity provision and crypto/DeFi. Available for onsite work in London; owner mentality and results-focused.

# Education

**MPhys Physics – University of Warwick October 2022 – July 2026**

**Grade:** First (expected)

* Relevant modules: scientific and high-performance computing, advanced mathematical methods, fluid mechanics, quantum mechanics and statistical physics.
* Investigated metastability of nucleation in the 2D Ising model via dozens of Monte Carlo simulations in MATLAB; co-authored a paper with two peers.
* Ran over 10,000 N-body simulations using a Python integrator and implemented MEGNO analysis for orbital stability with advanced post-processing.
* Numerically solved partial differential equations in C using finite-difference methods to model industrial heat flow; assessed accuracy and computational cost.

**A-levels – Forest School September 2020 – July 2022**

**Grade:** A\*A\*A\*A\*A\* (Maths, Further Maths, Physics, Chemistry, Extended Project)

* Sixth-form valedictorian award for best academic performance.
* Produced a 5,000-word extended project on renewable energy, nuclear power and geoengineering; awarded 100%.
* Presented research to a cohort of 160+ students and staff; received strong positive feedback.

# Work Experience

**Undergraduate Researcher**

Warwick Mathematics Institute **June 2025 – October 2025**

* Modelled finite-difference methods for wave propagation across 100+ aeroacoustics simulations, focusing on accuracy and computational efficiency.
* Analysed performance of 10 maximal-order and dispersion-relation-preserving schemes in MATLAB, optimising trade-offs between error and runtime.
* Prepared and presented a research poster summarising methods and results to academic peers.

**Project Manager**

Warwick Aerospace Society **January 2024 – March 2025**

* Managed a 12-member student team developing an ultra-high frequency satellite ground-station proof of concept; owned delivery and schedule.
* Authored 30+ pages of technical documentation and a bill of materials; coordinated procurement and assembly to deliver hardware in 10 weeks.
* Established GitHub-based version control and initiated MATLAB/Simulink modelling, improving collaboration and reproducibility across sub-teams.

**Academic Coordinator**

Warwick Physics Society **March 2024 – March 2025**

* Delivered seven revision lectures and ran weekly academic support sessions, improving peers' exam preparation.
* Organised a 10-year anniversary talk hosted by Prof Dame Athene Donald, attended by 100+ students and academics.
* Explained complex concepts to large groups and adapted material to varied audiences, receiving excellent feedback.

**RF Seekers Summer Intern**

MBDA UK **June 2024 – August 2024**

* Interned in the Modelling and Algorithms team; optimised a matched-filter algorithm in MATLAB using FFT, reducing runtime by 85% and improving system throughput.
* Co-developed a data-analysis application to enable six colleagues to rapidly inspect range–Doppler imagery, integrating a mid-fidelity algorithm for quick sanity checks.
* Delivered 50+ commits using professional version control practices and became a key contributor to the modelling codebase.
* Surveyed 10+ research papers to inform algorithmic choices and validate implementations.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a CV and cover-letter generator using OpenAI's API in Python; designed structured JSON output with Pydantic BaseModel and produced Word documents via docxtpl.
* Built two SQL databases to store job applications and track outcomes; implemented repeatable scripting and automated document generation.
* Achieved scores above 50% on three ATS-checker websites and correlated use with two job offers from ~200 applications.
* Owned the end-to-end project: design, implementation, testing and iterative improvements; used Git for version control.

# Skills

**Languages**: Python, MATLAB, C, SQL, JavaScript, HTML, CSS.

**Libraries:** NumPy, SciPy, Matplotlib, pydantic, jinja, openAI.

**Tools:** Git, GitHub, Simulink, LabVIEW, Origin Pro.

**Soft Skills:** Analytical thinking, Problem solving, Owner mentality, Teamwork, Adaptability.

**Interests:** Machine learning, Amateur radio, Tennis, Football, Chess, Debating.