Maxwell Catmur

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# Profile

Physics (MPhys 2026) applying for the 2026 Technology Graduate – Rotational Programme. Strong software and data engineering foundation (Python, MATLAB, SQL) with experience building developer tooling, performance optimisation and production-oriented projects. Preferred office: London.

# 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 and condensed matter.
* Investigated metastability of nucleation in the 2D Ising model via dozens of Monte Carlo simulations in MATLAB; co-authored a paper with two peers.
* Numerically solved PDEs in C using finite-difference methods to model industrial heat flow (95% project mark).
* Ran 10,000+ simulations with a Python N-body integrator and implemented MEGNO analysis for orbital stability quantification.

**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 mitigation of climate change (100%).
* Presented findings to a cohort of 160+ students and staff, demonstrating clear verbal communication and public speaking.

# Work Experience

**Undergraduate Researcher**

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

* Modelled finite-difference methods for wave propagation across 100+ aeroacoustics simulations, focusing on numerical stability and performance.
* Benchmarked and analysed 10 maximal-order and dispersion-relation-preserving schemes in MATLAB, optimising for accuracy versus computational cost.
* Prepared and presented a research poster summarising methods and performance results to academic audiences.

**Project Manager**

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

* Managed a 12-member team to design and build a proof-of-concept UHF satellite ground station, delivering hardware and documentation within 10 weeks.
* Established four specialised sub-teams, chaired weekly meetings and coached sub-team members to meet milestones and maintain quality.
* Implemented GitHub-based version control for model development and introduced MATLAB/Simulink modelling practices to the team.
* Authored 30+ pages of technical documentation and a bill of materials to support reproducible development and handover.

**RF Seekers Summer Intern**

MBDA UK **June 2024 – August 2024**

* Interned in the Modelling and Algorithms team on SAR imagery processing chains for AESA radar systems, contributing to algorithmic toolchains.
* Optimised a matched-filter implementation by applying FFT methods in MATLAB, reducing runtime by 85% and improving end-to-end campaign throughput.
* Co-developed a data-analysis application enabling six colleagues to rapidly inspect range–Doppler imagery and integrated a mid-fidelity sanity-check algorithm.
* Adopted professional software-development practices and version control (50+ commits); presented technical outcomes to 20+ colleagues.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a Python tool leveraging OpenAI's API to generate tailored CVs and cover letters from job descriptions.
* Used Pydantic BaseModel for structured JSON output and docxtpl to produce formatted Word documents; built two SQL databases to track applications and status.
* Measured ATS performance: achieved >50% on three ATS-checker sites and contributed to two job offers after 200 tracked applications.

**Drinks Ordering Web App August 2018 – September 2018**

* Designed and deployed a party-ordering web app that processed 80+ orders over 6 hours for 100+ guests, eliminating queues.
* Implemented asynchronous updates with Ajax to communicate order status to users in real time.
* Received positive technical feedback from professional software engineers and operational staff on usability and reliability.

# Skills

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

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

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

**Soft Skills:** Teamwork and collaboration, Written and verbal communication, Problem-solving and analytical thinking, Initiative and adaptability, Project leadership and coaching.

**Interests:** Machine learning, Amateur radio, Developer tooling, Data engineering and data pipelines.