Maxwell Catmur

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# Profile

Physics graduate (MPhys, expected First) applying for the 2026 Technology Graduate Scheme (Rotational) — preferred location: London. Passionate about Software and Data Engineering with practical experience in Python, MATLAB and C, building data pipelines, developer tooling and performance optimisation. Collaborative, proactive and eager to rotate across engineering teams.

# 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, electromagnetism and statistical physics.
* Investigated metastability of nucleation in the 2D Ising model using dozens of Monte Carlo simulations in MATLAB; co-authored a paper with two students within three weeks.
* Numerically solved partial differential equations in C via finite difference methods to model industrial heat flow, achieving 95%.
* Ran 10,000+ N-body simulations in Python and implemented MEGNO analysis for orbital stability quantification and post-processing.
* Co-developed a PID stabilisation algorithm in LabVIEW for a mechanical system, improving stability and adding angular control features (86%).

**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 climate-mitigation technologies, awarded 100%.
* Presented research findings to a 160+ audience, demonstrating clear written and verbal communication.

# 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 and benchmarked 10 maximal-order and dispersion-relation-preserving schemes in MATLAB to optimise accuracy versus runtime.
* Produced a technical poster summarising methods and results for a departmental research event.

**Project Manager**

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

* Managed a 12-member student team developing a UHF satellite ground station, establishing four specialised sub-teams and delegating tasks to meet milestones.
* Led 30+ weekly meetings and provided regular progress reports to senior leadership; oversaw procurement, design and assembly within a 10-week build phase.
* Authored 30+ pages of technical documentation including antenna selection matrices and bill of materials to support repeatable builds.
* Initiated MATLAB/Simulink modelling for rotator control and half-duplex communications, applying signal-processing and systems-modelling skills.
* Introduced GitHub-based version control for model development, improving collaboration and traceability across the team.

**RF Seekers Summer Intern**

MBDA UK **June 2024 – August 2024**

* Interned in the Modelling and Algorithms team working on SAR imagery processing chains for AESA radar systems.
* Optimised a matched-filter algorithm in MATLAB by implementing an FFT-based approach, reducing runtime by 85% and improving system throughput.
* Co-developed a data-analysis application that enabled six colleagues to rapidly inspect range–Doppler images, streamlining post-processing workflows.
* Integrated a mid-fidelity range–Doppler algorithm for fast sanity checks against higher-fidelity processing, improving analysis turnaround.
* Delivered 50+ commits using professional software-development practices and presented technical outcomes to 20+ colleagues.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a CV and cover-letter generator in Python using OpenAI's API to tailor outputs to job descriptions.
* Structured JSON output with Pydantic BaseModel and converted templates to Word via docxtpl; implemented two SQL databases to track applications.
* Achieved scores above 50% on three ATS-checker sites and reported two job offers after 200 tracked applications, demonstrating product-market fit.
* Built developer tooling for templating and data validation to support repeatable, production-like outputs.

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

* Built a web application to enable online drink orders for a 100+ guest event, processing 80+ orders in six hours and removing queues.
* Implemented Ajax for asynchronous order updates and real-time status notifications to users.
* Received positive feedback from two software engineers and venue staff for usability and reliability under load.

# Skills

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

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

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

**Soft Skills:** Teamwork and collaboration, Clear written and verbal communication, Proactive problem-solving and initiative, Project leadership and stakeholder communication, Openness to feedback and mentoring.

**Interests:** Preferred rotations: Software Engineering, Data Engineering, Infrastructure Engineering, Cyber Security, Data pipelines, developer tooling, CI/CD concepts, benchmarking and performance optimisation, Machine learning, Amateur radio.