Maxwell Catmur

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# Profile

MPhys Physics (University of Warwick), expected July 2026. Available for a 12-month Graduate Programme. Analytical physicist with strong data analysis, numerical modelling and presentation skills seeking a graduate role in Macquarie Asset Management, with interest in infrastructure, renewable energy, transactions and risk-aware investment solutions.

# 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.
* Conducted Monte Carlo and N-body simulations (10,000+ runs) and used MEGNO for orbital stability analysis; implemented post-processing in Python for quantitative interpretation.
* Numerically solved partial differential equations in C using finite difference methods to model industrial heat flow; modelled and validated control algorithms (PID) in LabVIEW for mechanical stabilisation systems.

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

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

* Extended Project (5,000 words) assessing renewable energy, nuclear power and geoengineering to mitigate climate change — awarded 100%.
* Received sixth form valedictorian award for academic performance.
* Presented research findings to a cohort of 160+ students and staff, demonstrating clear communication and public speaking.

# Work Experience

**Undergraduate Researcher June 2025 – October 2025**

Warwick Mathematics Institute

* Modelled finite difference methods for wave propagation across 100+ aeroacoustic simulations, analysing trade-offs between accuracy and computational cost.
* Benchmarked 10 maximal-order and dispersion-relation-preserving schemes in MATLAB, informing model selection and parameter choices.
* Prepared a concise poster for a research event and presented findings to academic peers, refining technical communication and visualisation skills.

**Project Manager January 2024 – March 2025**

Warwick Aerospace Society

* Led a 12-member team to design and build a proof-of-concept UHF satellite ground station, coordinating sub-teams for electronics, mechanical, software and testing.
* Organised 30+ weekly meetings, delegated work, provided weekly reports to senior leadership and managed procurement to deliver the prototype within 10 weeks.
* Authored 30+ pages of technical documentation including bill of materials and selection matrices, strengthening stakeholder reporting and project governance.
* Introduced GitHub-based version control and MATLAB/Simulink modelling to standardise development and reproducibility.

**Academic Coordinator March 2024 – March 2025**

Warwick Physics Society

* Delivered seven revision lectures and ran weekly academic support sessions, improving student preparedness for examinations.
* Organised a departmental 10-year anniversary talk attended by 100+ students and academics, liaising with senior speakers and event stakeholders.
* Explained complex technical concepts to large audiences, refining clarity in presentations and stakeholder engagement.

**RF Seekers Summer Intern June 2024 – August 2024**

MBDA UK

* Ten-week placement in the Modelling and Algorithms team working on synthetic aperture radar (SAR) processing within AESA radar systems.
* Optimised a matched-filter algorithm by implementing FFT methods, reducing runtime by 85% and improving processing throughput.
* Co-developed a data-analysis application enabling six colleagues to rapidly review range–Doppler imagery; delivered 50+ commits using professional version control.
* Presented technical outcomes to 20+ colleagues, producing clear slides and supporting documentation for non-specialist stakeholders.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a CV and cover-letter generator using OpenAI's API in Python, producing structured JSON outputs for templating.
* Used Pydantic for schema validation and docxtpl to generate formatted Word documents; implemented two SQL databases to track applications and outcomes.
* Achieved >50% on three ATS-checker sites and supported two successful job offers after iterative testing across ~200 applications, demonstrating measurable impact on application processes.
* Prepared user-facing documentation and summary reports to communicate results and deployment steps to collaborators.

# Skills

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

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

**Tools:** Microsoft Excel, Microsoft PowerPoint, Microsoft Word, Git, GitHub, LabVIEW, Origin Pro.

**Soft Skills:** Analytical thinking, Data analysis and quantitative reasoning, Teamwork and stakeholder collaboration, Communication and presentation, Problem-solving and initiative.

**Interests:** Sustainability and renewable energy, Infrastructure and space systems, Machine learning, Amateur radio.