Maxwell Catmur

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# Profile

Graduate Digital Engineer applicant and upcoming MPhys Physics (University of Warwick). Strong numerical and 3D modelling experience, data extraction and technical documentation. Meticulous team player with version-control workflow experience, keen to apply BIM and digital engineering principles and rapidly train in Revit, AutoCAD and Navisworks.

# 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 electromagnetism, giving strong foundations in numerical modelling and 3D problem-solving.
* Implemented Monte Carlo simulations in MATLAB and an N-body Python integrator (10,000+ runs) to generate reproducible model outputs and post-processing pipelines.
* Numerically solved PDEs in C via finite-difference schemes for industrial heat-flow modelling and validated results against analytic solutions.
* Led two 6-person group research projects, scheduling meetings, delegating tasks and coordinating multidisciplinary contributions; both projects achieved 70%+.

**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 top academic performance.
* Extended Project (5,000 words) on renewable energy, nuclear power and geoengineering; awarded 100%.
* Presented research findings to 160+ students and staff, demonstrating clear verbal communication and technical presentation skills.

# Work Experience

**Undergraduate Researcher**

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

* Implemented and validated finite-difference numerical models across 100+ aeroacoustics simulations, ensuring reproducible model creation and disciplined data logging.
* Benchmark-tested and analysed performance of 10 numerical schemes in MATLAB, optimising accuracy versus computational cost and documenting results for handover.
* Prepared a technical poster and presented findings at an institute event; packaged code and datasets to support reproducible research and future development.

**Fly Your Satellite Workshop (Participant)**

European Space Agency **November 2024 – November 2024**

* Completed a 5-day systems-engineering workshop covering requirements, systems design and ground-station communications; applied systems thinking to rapid design sprints.
* Worked in a 10-person multidisciplinary team to deliver a mission-compliant CubeSat design under strict time constraints, enhancing coordination and communication skills.
* Attended specialist lectures and documented key requirements and interfaces, reinforcing structured documentation and multidisciplinary workshop participation.

**RF Seekers Summer Intern**

MBDA UK **June 2024 – August 2024**

* Contributed to SAR processing chains within the Modelling and Algorithms team; optimised a matched-filter implementation in MATLAB using FFTs, reducing runtime by 85%.
* Integrated mid-fidelity algorithms into an analysis application used by six colleagues, improving rapid model checks during test campaigns and producing supporting technical notes.
* Used professional version-control workflows (Git) to deliver 50+ commits, collaborated with engineers and presented results to 20+ staff, producing reproducible code and documentation.

**Project Manager**

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

* Led a 12-member team to design and build a passive UHF ground station proof-of-concept, coordinating multidisciplinary tasks, schedules and procurement to deliver within 10 weeks.
* Authored 30+ pages of technical documentation including bill of materials, assembly procedures and design rationale to support testing and handover.
* Established Git-based version control and MATLAB/Simulink modelling workflows to maintain model integrity across sub-teams and improve traceability.
* Chaired weekly meetings, delegated responsibilities across four sub-teams and maintained progress reports for senior leadership.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a Python application using OpenAI's API to generate CVs and cover letters from structured job descriptions, outputting templated Word documents via docxtpl.
* Used Pydantic models and SQL databases to enforce structured JSON outputs and track 200+ applications, achieving 50%+ on three ATS-checker sites.
* Automated template and content maintenance workflows, demonstrating experience with templates, content libraries and producing consistent digital deliverables.

# Skills

**Languages**: Python, MATLAB, C, SQL.

**Libraries:** NumPy, SciPy, Matplotlib, Pydantic.

**Tools:** Git / GitHub, Simulink, LabVIEW, Microsoft Office.

**Soft Skills:** Attention to detail, Teamwork and multidisciplinary coordination, Verbal and written communication, Willingness to learn new technologies, Organisational skills, Proactive meeting and workshop participation.

**Interests:** Digital engineering, BIM workflows and standards, 3D modelling concepts, Machine learning.