Maxwell Catmur

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# Profile

MPhys Physics (expected First) pursuing a Graduate RF/uWave Systems Engineer role. Practical experience in radio systems, analogue circuit design and prototyping via UHF ground-station development and an AESA/SAR internship. Skilled in RF modelling and test-focused documentation using MATLAB/Simulink, LabVIEW and Git.

# Education

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

**Grade:** First (expected)

* Relevant modules: electromagnetism, scientific and high-performance computing, advanced mathematical methods and fluid mechanics — strong foundation for RF and radio systems.
* Designed, built and tested a DC voltage regulator circuit using op-amps and MOSFETs, demonstrating analogue circuit design and hands-on prototyping.
* Co-developed a stabilisation algorithm in LabVIEW implementing PID control for a nodding-donkey platform, improving actuator stability and control.
* Performed extensive numerical simulation work (Monte Carlo, finite-difference PDEs) and signal-processing analysis in MATLAB and C.

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

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

* Awarded sixth-form valedictorian for top academic performance.
* Completed a 5,000-word extended project on energy and climate mitigation (100%) — demonstrates technical research and written documentation skills.
* Presented project findings to a cohort of 160+ students and staff, evidencing clear verbal communication and presentation ability.

# Work Experience

**Undergraduate Researcher**

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

* Modelled finite-difference schemes for wave propagation across 100+ aeroacoustics simulations using MATLAB, emphasising dispersion-preserving accuracy.
* Analysed and compared 10 high-order numerical schemes to optimise accuracy-versus-computational-cost trade-offs for system-level simulation.
* Prepared and presented research poster summarising simulation methodology and results to a technical audience.

**Project Manager — UHF Ground Station Proof-of-Concept**

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

* Led a 12-person team to design, procure and assemble a proof-of-concept passive UHF satellite ground station for NOAA reception, delivering hardware in 10 weeks.
* Authored 30+ pages of technical documentation including antenna-selection Pugh matrices and a detailed bill of materials, supporting build and test planning.
* Initiated MATLAB/Simulink modelling of a half-duplex UHF ground station (Satellite Communication toolbox) to evaluate link performance and rotator control behaviour.
* Coordinated cross-disciplinary activities with the Chief Engineer and implemented Git-based version control for model and firmware development.

**Fly Your Satellite Workshop (Participant)**

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

* Completed a 5-day ESA workshop covering systems engineering, requirements and ground-station communications for CubeSats.
* Attended lectures on satellite communications, RF link planning and systems integration from technical experts at ESTEC.
* Collaborated in a timed CubeSat design sprint, meeting mission requirements through rapid delegation and systems-level trade-offs.

**RF Seekers Summer Intern — Modelling Algorithms**

MBDA UK **June 2024 – August 2024**

* 10-week placement working on synthetic aperture radar (SAR) image processing within AESA radar systems, building domain knowledge in radio and microwave signal processing.
* Optimised a matched-filter algorithm in MATLAB by implementing FFTs, reducing runtime by 85% and improving end-to-end processing throughput.
* Co-developed a data-analysis application used by six colleagues for rapid range–Doppler image inspection and integrated a mid-fidelity algorithm for fast sanity checks.
* Presented placement outcomes to 20+ colleagues and contributed 50+ commits following professional version-control practices.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a CV and cover-letter generator using OpenAI's API and Python, producing structured JSON outputs via Pydantic and templated Word documents with docxtpl.
* Implemented SQL databases to track applications and instrumented ATS-checking; achieved >50% in three ATS checkers and iterated outputs based on feedback.
* Demonstrated disciplined documentation, testing and version control—skills applicable to reporting and lab-result tracking in RF projects.

# Skills

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

**Libraries:** NumPy, SciPy, Matplotlib, Satellite Communication toolbox (MATLAB), pydantic.

**Tools:** Git / GitHub, Origin Pro, MATLAB/Simulink (modelling simulation), LabVIEW (instrument control data acquisition), Microsoft Office (technical reporting).

**Soft Skills:** Technical documentation and reporting, Presentation and stakeholder communication, Cross-disciplinary teamwork (hardware/software/controls), Problem-solving and attention to detail, Project coordination and task delegation.

**Interests:** Amateur radio, Wireless communications, Prototyping and hardware bring-up, Satellite systems.