MAXWELL CATMUR

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PROFILE

Physics MPhys (expected First) applying for Graduate RF Engineer 2025 at Cambridge Consultants. Practical experience in RF and radio systems through UHF ground-station prototyping and AESA/SAR internship; skilled in MATLAB, Simulink and LabVIEW, prototyping and lab testing, with strong technical documentation and cross-disciplinary communication.

EDUCATION

MPhys Physics – University of Warwick **October 2022 – July 2026**
Grade: First (expected)

- Relevant modules: electromagnetism, scientific and high-performance computing, advanced mathematical methods; strong foundation in radio and wave physics.
- Extensive numerical modelling experience: ran 10,000+ simulations for orbital stability and implemented MEGNO analysis; proficient in MATLAB and C for PDE and wave-propagation problems.
- Investigated metastability in the 2D Ising model using Monte Carlo methods and co-authored a short paper with peers.
- Developed PID control and stabilisation algorithms in LabVIEW for a nodding-donkey system, including hardware-in-the-loop testing and performance tuning.
- Designed, built and tested a DC voltage regulator using operational amplifiers and MOSFETs, carrying out bench testing and iterative debugging.

A-levels – Forest School **September 2020 – July 2022**
Grade: A*A*A*A*A* (Maths, Further Maths, Physics, Chemistry, Extended Project)

- Sixth form valedictorian; produced a 5,000-word extended project on energy and climate mitigation (100%).
- Presented project findings to a 160+ audience, demonstrating clear technical communication and public speaking.
- Strong quantitative background supporting engineering and RF coursework.

WORK EXPERIENCE

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

- Modelled finite-difference methods for wave propagation across 100+ aeroacoustics simulations using MATLAB, improving numerical stability and accuracy.
- Analysed and compared 10 high-order schemes, optimising for dispersion properties and computational cost to inform simulation selection.
- Prepared and presented a 2-page poster summarising methods and results to peers and academic staff, producing concise technical documentation.

Project Manager — UHF Ground Station
Warwick Aerospace Society **January 2024 – March 2025**

- Led a 12-member team to design, procure and assemble a proof-of-concept passive UHF satellite ground station in 10 weeks, coordinating mechanical, RF and software tasks.
- Authored 30+ pages of technical documentation including Pugh-matrix-based antenna selection and a detailed bill of materials to support prototyping and procurement.
- Implemented MATLAB/Simulink modelling for a half-duplex UHF ground station (including rotator control) to support system behaviour and control algorithms.
- Organised weekly meetings, delegated work across four sub-teams and reported progress to society leadership, ensuring timely delivery and integration.
- Introduced GitHub version control for models and documentation to support collaborative development and traceability.

Participant — Fly Your Satellite Workshop
European Space Agency **November 2024 – November 2024**

- Completed a 5-day ESA workshop on CubeSat systems engineering, requirements and ground-station communications.
- Attended 20 lectures from technical experts covering systems engineering, communications and testing practices relevant to RF systems.
- Collaborated in a rapid design sprint to meet mission requirements under time pressure, refining system-level thinking and cross-disciplinary coordination.

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

- Interned in the Modelling and Algorithms team, working on synthetic aperture radar (SAR) imagery processing within AESA radar systems.
- Optimised a matched-filter algorithm in MATLAB by implementing FFTs, reducing runtime by 85% and improving throughput for performance campaigns.
- Co-developed a data-analysis application used by six colleagues for rapid range–Doppler image inspection and integrated a mid-fidelity algorithm for quick sanity checks.
- Delivered 50+ commits using professional version control workflows and presented technical outcomes to 20+ colleagues, enhancing stakeholder communication.

PROJECTS

AI CV Generator **July 2025 – ongoing**

- Developed a CV and cover-letter generator using OpenAI's API and Python, focusing on structured, ATS-friendly output.
- Implemented Pydantic models for JSON schema validation and used docxtpl to produce formatted Word documents for applications.
- Built SQL databases to track applications and outcomes; achieved >50% scores on three ATS-checker sites and contributed to receiving two job offers after 200 applications.

SKILLS

Languages: MATLAB, Simulink, Python, C, SQL.
Libraries: NumPy, SciPy, Matplotlib, pydantic.
Tools: LabVIEW, Git / GitHub, Origin Pro, Microsoft Office, MATLAB/Simulink modelling (radio/communications), Antenna selection and bill of materials for prototyping, Prototyping and hardware bring-up; bench testing and debugging.

Soft Skills: Technical documentation and reporting, Verbal presentation to technical and non-technical audiences, Cross-disciplinary collaboration (hardware, embedded software, DSP), Project coordination and stakeholder communication, Problem solving and attention to detail.
Interests: Radio systems and amateur radio, Telecommunications and satellite communications, Prototyping and hardware testing.