Maxwell Catmur

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# Profile

MPhys Physics student (expected 2026) seeking Air Quality Field Team Analyst 2025 role at Ricardo. Practical instrumentation and field-testing experience, strong data processing and scripting skills (Python, MATLAB, LabVIEW), meticulous attention to detail, excellent organisation and problem solving; willing to undertake extended travel and fieldwork.

# Education

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

**Grade:** First (expected)

* Relevant modules: scientific and high-performance computing, fluid mechanics, experimental methods and instrumentation, advanced mathematical methods.
* Ran >10,000 Monte Carlo simulations (MATLAB) for a study on metastability and co-authored a paper with peers; strong experience in data analysis and result validation.
* Numerically solved PDEs in C using finite-difference schemes for industrial heat-flow modelling; emphasised accuracy and computational efficiency.
* Co-developed a PID stabilisation algorithm in LabVIEW for a nodding-donkey system, performing hardware testing and tuning.

**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.
* 5000-word Extended Project on mitigation of climate change (renewables, nuclear, geoengineering) — awarded 100%, demonstrating research and technical writing.
* Presented project findings to a cohort of 160+ students and staff, evidencing clear verbal communication skills.

# Work Experience

**Undergraduate Researcher June 2025 – October 2025**

Warwick Mathematics Institute

* Modelled wave propagation using finite-difference methods across 100+ aeroacoustics simulations, maintaining rigorous data records and validation.
* Analysed and compared 10 numerical schemes in MATLAB, optimising for accuracy and computational cost with reproducible code and documented results.
* Prepared and presented a concise 2-page poster summarising methodology and findings to academic peers.

**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, overseeing procurement, assembly and field testing within a 10-week schedule.
* Authored 30+ pages of technical documentation and a detailed bill of materials to support repeatable commissioning and maintenance.
* Organised weekly meetings, delegated tasks across four sub-teams and provided progress reports to senior leadership, demonstrating strong organisation and teamworking.
* Introduced GitHub-based version control for modelling and documentation workflows to improve reproducibility and change tracking.

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

MBDA UK

* Worked in the Modelling and Algorithms team on SAR imagery processing chains, gaining hands-on experience with signal processing and testing workflows.
* Optimised a matched-filter algorithm in MATLAB using FFT, reducing runtime by 85% and improving processing throughput for campaign analysis.
* Co-developed a data-analysis application used by six colleagues to streamline post-campaign processing and sanity checking of imagery.
* Delivered 50+ commits following professional software-development practices and presented technical outcomes to multidisciplinary colleagues.

# Projects

**AI CV Generator July 2025 – ongoing**

* Developed a CV and cover-letter generator using OpenAI's API and Python to produce structured outputs tailored to job descriptions.
* Used Pydantic for structured JSON models and docxtpl to generate formatted Word documents; built SQL databases to track applications and outcomes.
* Achieved >50% on three ATS-checker tools and supported two successful job offers after processing 200 tracked applications, demonstrating data-driven iteration.

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

* Built a web application to manage drink orders for a 100-guest event, processing 80+ orders across 6 hours and eliminating bar queues.
* Implemented Ajax-driven asynchronous updates to inform users of order status and coordinated frontend–backend interactions under load.
* Received positive feedback from event staff and two professional software engineers on usability and reliability.

# Skills

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

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

**Tools:** LabVIEW, Microsoft Office (Excel), Git / GitHub, Simulink, Data logging and analysis workflows.

**Soft Skills:** Attention to detail and accuracy, Organisation and time management, Teamworking and communication, Problem solving and self-reliance, Adaptability and willingness to travel for fieldwork.

**Interests:** Environmental sustainability, Amateur radio, Machine learning.