Maxwell Catmur

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# Profile

MPhys Physics (First expected), seeking a Graduate Offshore Analyst role at Aquaterra Energy. Strong numerical modelling and data analysis skills with MATLAB and Python; experience in wave propagation, PDEs and simulation. Clear technical report writing and stakeholder communication.

# Education

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

**Grade:** First (expected)

* Consistent high performance: 85% (Year 1), 89% (Year 2), 82% (Year 3).
* Relevant modules: fluid mechanics, scientific and high-performance computing, advanced mathematical methods, numerical methods for PDEs.
* Modelled heat flow in industrial pipes using finite-difference methods in C (95% in assignment); practical experience in numerical discretisation and stability analysis.
* Ran 10,000+ Monte Carlo simulations and applied MEGNO for orbital-stability analysis using Python, including post-processing and statistical interpretation.
* Designed PID control and LabVIEW stabilisation algorithm for a nodding-donkey system; led implementation and testing (86%).

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

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

* Received sixth-form valedictorian award for best academic performance.
* Extended Project (5000 words) on renewable energy, nuclear power and geoengineering (100%).
* Presented research to a cohort of 160+ students and staff, demonstrating confident public speaking and technical communication.

# Work Experience

**Undergraduate Researcher June 2025 – October 2025**

Warwick Mathematics Institute

* Modelled wave propagation using finite-difference schemes in MATLAB across 100+ aeroacoustics simulations, focusing on accuracy and numerical stability.
* Analysed and compared 10 maximal-order and dispersion-relation-preserving schemes, optimising accuracy versus computational cost for large-scale simulations.
* Prepared a concise technical poster and two-page summary communicating methods, results and implications for structural/wave-loading analyses.

**Project Manager January 2024 – March 2025**

Warwick Aerospace Society

* Led a 12-member team to design and build a UHF satellite ground-station proof-of-concept, coordinating schedules, procurement and test activities.
* Authored 30+ pages of technical documentation and bill of materials; used Pugh matrices to support engineering decisions and risk assessments.
* Initiated MATLAB/Simulink modelling for communications and rotator control; implemented GitHub version control and weekly reporting to senior leadership.
* Organised and chaired weekly meetings, delegated tasks across four sub-teams and ensured delivery to tight deadlines.

**RF Seekers Summer Intern (Modelling Algorithms) June 2024 – August 2024**

MBDA UK

* Developed and optimised signal-processing algorithms in MATLAB; implemented FFT-based matched-filter reducing runtime by 85%, improving overall pipeline performance.
* Co-developed a range–Doppler data-analysis application used by six colleagues to accelerate post-processing during field campaigns.
* Integrated a mid-fidelity algorithm into the application for rapid sanity checks and validated performance against higher-fidelity approaches.
* Followed professional software practices with 50+ commits, conducted literature reviews and presented a technical placement summary to 20+ colleagues.

# Projects

**AI CV Generator July 2025 – ongoing**

* Built a CV and cover-letter generator using OpenAI API in Python, with Pydantic for structured JSON output and docxtpl for Word export.
* Implemented automation and data tracking with two SQL databases to store applications and monitor outcomes.
* Achieved ATS-checker scores above 50% on three platforms and contributed to two job offers after ~200 applications.
* Demonstrated scripting for analysis and automation applicable to engineering workflows (Python, templating and data pipelines).

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

* Developed an order-management web application handling 80+ orders over 6 hours, removing queues and improving event logistics.
* Implemented Ajax for asynchronous order updates and a responsive front-end to inform users when orders were ready for collection.
* Received positive feedback from event staff and two software engineers on implementation and user experience.

# Skills

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

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

**Tools:** Microsoft Excel (data analysis, spreadsheets), MS Word (technical report writing), Git / GitHub (version control), LabVIEW, Origin Pro, MATLAB toolboxes / Simulink, Experience with numerical methods for PDEs and understanding of finite-element concepts; willing to learn OrcaFlex, SHEAR7 and GRLWEAP.

**Soft Skills:** Analytical and problem-solving mindset, Technical report writing and presentation, Stakeholder communication and client-facing clarity, Teamwork and leadership, Attention to detail and time management.

**Interests:** Offshore energy and sustainability (renewables, CCS, hydrogen), Fluid dynamics and structural analysis, Programming for analysis/automation, Amateur radio, Tennis, Chess.