Maxwell Catmur

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# Profile

MPhys Physics student (expected July 2026) applying for the Commodities Trading Rotational Analyst Graduate Programme 2026 at Castleton Commodities International. Strong quantitative ability in Python and SQL, experience in numerical modelling, back-testing and data analysis, with a keen interest in energy markets, trading and risk management.

# Education

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

**Grade:** First (expected)

* Relevant modules: scientific and high-performance computing, advanced mathematical methods, statistical physics and numerical methods for modelling and forecasting.
* Implemented N-body integrator in Python, ran 10,000+ simulations and analysed orbital stability using MEGNO techniques for quantitative assessment.
* Developed finite-difference solvers in C to model heat transfer through industrial pipes and implemented Monte Carlo simulations in MATLAB for Ising-model nucleation studies.
* Co-developed a PID stabilisation algorithm in LabVIEW for an industrial actuator and led two group research projects, chairing weekly meetings and ensuring equitable task allocation.
* High-performance computing and data-analysis experience applied to simulation design, optimisation and result interpretation.

**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 academic performance.
* Extended Project (5000 words) on renewable energy, nuclear power and geoengineering; awarded 100%.
* Presented research to 160+ students and staff, demonstrating clear written and verbal communication.

# Work Experience

**Undergraduate Researcher June 2025 – October 2025**

Warwick Mathematics Institute

* Modelled wave propagation using finite-difference methods across 100+ aeroacoustics simulations, focusing on numerical stability and dispersion control.
* Analysed and compared 10 high-order schemes in MATLAB, optimising for accuracy versus computational cost to inform model selection.
* Communicated findings via a poster presentation to peers and supervisors, translating technical results into actionable recommendations.

**RF Seekers Summer Intern — Modelling and Algorithms June 2024 – August 2024**

MBDA UK

* Optimised a matched-filter algorithm in MATLAB by implementing FFT methods, reducing runtime by 85% and improving end-to-end processing performance.
* Co-developed a data-analysis application used by six colleagues to accelerate range–Doppler image interpretation, integrating a mid-fidelity algorithm for quick sanity checks.
* Delivered 50+ code commits using professional version control and presented technical outcomes to 20+ colleagues, demonstrating clear verbal and written communication.

**Project Manager January 2024 – March 2025**

Warwick Aerospace Society

* Managed a 12-member team to design and build a proof-of-concept UHF satellite ground station, coordinating procurement, assembly and testing within 10 weeks.
* Chaired 30+ weekly meetings, created sub-teams and produced 30+ pages of technical documentation including selection matrices and bills of materials.
* Initiated MATLAB/Simulink modelling and GitHub version control for the project, improving collaboration and traceability of technical changes.

# Projects

**AI CV Generator (Python, SQL) July 2025 – ongoing**

* Developed a CV and cover-letter generator using OpenAI's API in Python; structured JSON output using Pydantic and templated Word output with docxtpl.
* Built two SQL databases to store and track applications and implemented data pipelines to manage application status and ATS scoring.
* Achieved >50% on three ATS-checker sites and contributed to receiving two job offers after ~200 applications, demonstrating practical understanding of ATS and keyword optimisation.

**Science YouTube Channel Podcast June 2020 – March 2021**

* Founded and produced 11 science videos and podcast episodes, accruing 10,000+ total views and developing concise technical explanations for broad audiences.
* Wrote and delivered scripts, coordinated a three-person production team and managed editorial schedules, improving communication and stakeholder engagement.
* Received formal recognition from teaching staff for clarity of communication and public outreach.

# Skills

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

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

**Tools:** Git / GitHub, Microsoft Excel (Office), Simulink, Version control / CI workflows.

**Soft Skills:** Analytical thinking and quantitative modelling, Teamwork and cross-functional collaboration, Clear verbal and written communication, Problem-solving and attention to detail, Adaptability in rotational environments.

**Interests:** Energy and commodity markets, Quantitative trading and risk management, Machine learning, Amateur radio.