Morgan Thomas

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Education

2023 – 2026 BSc Computer Science at **University of Leeds**
2021 – 2023 A-Levels at **Christleton High School** in Maths, Computer Science, and Physics (A,A,B)
Extended Project Qualification - Developing a Crypto Currency (A*)

Experience

Head of the Gryphon Project - Leeds University Rocketry Association Mar 2025 – present

- Leading a 25+ person engineering team to develop one of the UK's first student liquid rockets, having led the UK's largest non-commercial rocket launch in June 2025.
- Authoring and reviewing technical documentation, performing design reviews, and implementing system-level requirements to ensure mission and safety compliance.
- Oversee a £15,000+ budget of university grants and partner donations across five sub-teams, managing procurement and manufacturing processes

Flight Dynamics Lead - Leeds University Rocketry Association Sept 2024 – Mar 2025

- Produced and managed the UK's first student safety case for a Large Rocket Permission submitted to the Civil Aviation Authority.
- Developed a simulation system using RocketPy to determine optimal launch windows and evaluate go/no-go from a custom weather metric generated using GFS and ECMWF forecasts.
- Added MPI parallelisation to RocketPy's Monte Carlo simulations, enabling execution of 250,000 runs on the University's HPC cluster.
- Automated parametric studies in RasAero II, optimising the rocket to achieve speeds of Mach 3.5 with an apogee of 160,000ft.

Projects

Investigating Real-Time Data Fusion for Detection of Low-Observable Aerial Objects Ongoing

- Designing and implementing a distributed camera network to detect, track, and identify low-observable aerial objects beyond radar visibility.
- Developing a near real-time detection pipeline to aggregate sensor streams, performing tracking and state estimation.
- Implementing a sharded processing architecture to enable scalable real-time analysis across large geographic areas.
- Optimising the detection algorithm using simulated data from programmatically rendered scenes in Blender.

Rust Flight and Trajectory Simulator Ongoing

- Developing a 6-degree-of-freedom trajectory simulator in Rust for rocket flight and recovery.
- Integrated with data produced from existing software to simulate flights up to Mach 25.
- Produce distributions of an area's climate using ERA5 reanalysis forecast data
- Executed Monte Carlo simulations using generated weather distributions and vehicle parameters to determine landing areas and apogee

House Stats - Full-Stack Data Analytics Platform for the UK Housing Market GitHub

- Designed and built a web-based analytics platform for visualising and analysing UK Land Registry housing data.
- Engineered a distributed data-processing pipeline using Celery, Polars, and PostgreSQL, enabling sub-second analysis across 26M+ rows.
- Deployed and maintained a fully self-hosted infrastructure using Proxmox VMs and Docker containers to run the web server, PostgreSQL database, Celery cluster, and Kafka, ensuring reliability and scalability.
- Built data-analysis methods to remove anomalies and compute year-on-year price changes, highlighting seasonal trends in UK house prices that short-term comparisons miss.

Interests & Skills

Python	Rust	Embedded Development	Physical Simulations (6-DoF, CFD)
C	Java	Linux Administration	Classic Car Restoration
Javascript	Web Development	Cycling	Rocketry