

Liam Pallett

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Education

University of Sheffield

Expected July 2030

MEng Computer Science (Software Engineering) with Placement Year

Year 1: First Class average

The Maelor School

July 2025

A Levels: A*A*AA (A* in Mathematics and Further Mathematics; A in Computer Science and Physics)

Advanced Skills Baccalaureate Wales: A; independent research dissertation on cyberattacks and factors contributing to their rise.

Technical Skills

Languages: Python, C++, Haskell, Go, Java, Ruby

Libraries/frameworks: NumPy, Matplotlib, scikit-learn, Astropy, Astroquery, Pandas, Requests, Astro, LangChain, LangGraph

Tools/platforms: Git, Linux, Unix shell, SSH, GitHub Actions, CI/CD, PlatformIO, Ollama, LaTeX

Embedded/networking: ESP32, NVIDIA Jetson, Arduino framework, I²C, TCP/TLS

Projects

Star Tracking Algorithms

Python, scikit-learn, Astropy, Astroquery, Pandas, NumPy

- Developed a Random Forest classifier to distinguish catalogue-derived star detections from artificially injected false detections in simulated sensor observations.
- Generated simulated fields of view from Hipparcos data, tuned model parameters with GridSearchCV and investigated possible data leakage during evaluation.

Flight Dynamics Simulator

Python, Matplotlib, numerical methods

- Built a configurable multistage rocket-flight simulator modelling propulsion, trajectory and flight performance, with orbital simulation capability.
- Applied isentropic-flow equations and Newton–Raphson root finding to engine calculations; compared predicted performance with historical rocket flights.
- Implemented flight-performance plots and animated launch visualisation; Monte Carlo analysis remains planned.

ISS Bluesky Bot

Python, Requests, Celestrak, AT Protocol, GitHub Actions

- Built an automated bot predicting International Space Station passes over Sheffield from Celestrak OMM data and publishing predictions to Bluesky.
- Implemented orbital propagation and ECI/ECEF/local-coordinate transformations, including sidereal-time handling to account for Earth's rotation.
- Automated scheduled execution and publishing with GitHub Actions.

Open-TTP Telemetry Protocol

C++, binary packet design, checksums

- Developed a 64-byte packet transmission simulator for telemetry data, including TLE encoding and checksum validation.
- Maintaining protocol documentation; a Go implementation is planned, not yet implemented.

Physics Engine

C++, vector mathematics, numerical simulation

- Developed a custom physics simulation backend with vector mathematics and components for representing and updating physical bodies.
- Explored an OpenGL visualisation frontend, which remains unfinished.

Avionics Computer

C++, ESP32, Arduino Wire, I²C

- Implemented reusable I²C sensor-acquisition routines for an ESP32-based model-rocketry flight computer.
- Designing LoRa telemetry and SD-card logging; neither has yet been integrated or tested.

Apollo Portable Development Cyberdeck

CircuitPython, Raspberry Pi Pico

- Built a field-portable development cyberdeck using Raspberry Pi hardware.
- Reverse-engineered an undocumented keyboard matrix and wrote custom KMK firmware for a Raspberry Pi Pico.

Ceridwen Local AI Agent

Python, LangChain, LangGraph, Ollama, SQLite, Rich

- Built a local terminal-based, bring-your-own-model agent with 18 documented tools spanning search, file operations and macOS integrations.
- Integrated Ollama for local model inference and LangGraph-based conversational workflows with configurable prompts and persistent conversation threads.

glirc IRC Client

Go, tview, TCP/TLS, goroutines

- Developed a terminal IRC client supporting protocol message parsing, command handlers, channel management and TCP/TLS connections.
- Used Go goroutines and channels for concurrent network and terminal I/O, with parser tests and modular client/server handlers.

Satellite Visualiser

Python, Matplotlib, Requests, CelesTrak

- Processed CelesTrak OMM orbital data, propagated satellite positions and converted results into geographic coordinates for equirectangular ground-track visualisation.
- Used the orbital-data workflow as a foundation for the later ISS Bluesky Bot.

Laundry CLI

Python, Requests, REST/JSON, terminal UI

- Built an object-oriented terminal dashboard for live laundry-machine status and cycle times using the WashPoint API.

Personal Portfolio and Blog

Astro, TypeScript, HTML, CSS, Netlify

- Developed and deployed a personal portfolio and blog with project pages, content collections and automated publishing workflows.

Experience

R&D Engineer (Part-time)

Sep 2026–Present

ProtoGT

Sheffield, UK

- Maintain and update the deployed Astro-based company website.
- Work on technical SEO, site architecture, metadata and search indexing.

R&D Engineer Intern

Jul–Sep 2026

ProtoGT

Sheffield, UK

- Selected through the University of Sheffield SME Ambition Internship Programme.
- Assembled a multipurpose electronics cabinet incorporating a CO₂ laser and electrical isolation controls.
- Conducted a confidential client feasibility study investigating edge-AI transcription for a dedicated audio-recitation device.
- Developed and deployed the company website using Astro, replacing its previous Wix-based site.

Extracurricular Activities & Programmes

Technical Content Creator, @liamisastudent

- Research and produce technical Instagram posts about space and computer science.
- Collaborated twice with the university engineering Instagram page on jointly produced posts.

Edge AI Community Leader, TinkerLab Sheffield

May 2026–Present

- Develop hands-on Edge AI workshop materials covering Python, local language-model inference and NVIDIA Jetson hardware.
- Configure and test Jetson Orin Nano development environments using Linux, Ollama and SSH for remote access.
- Support IoT workshops and contribute to event planning, administration and technical preparation.

Inclusion Officer, Sheffield Statistics Society

May 2026–Present

- Support committee administration, event planning and society participation.
- Represented the society at the university Activities Fair and am preparing to host a society pub quiz.

Field Hockey Player, SUEHC

Sep 2025–Present

- Competed in school and university hockey across five years and two teams.

J.P. Morgan Chase & Co., Aspiring Professionals Programmes

2024, 2025

- Selected for insight weeks in Glasgow and London, participating in Agile, cloud-infrastructure and engineering activities.

Certifications

- NASA ARSET, Fundamentals of Remote Sensing (Aug 2026)
- European Space Agency, Visualising Climate Change with ESA CCI ECVs (Mar 2026)
- MATLAB Onramp (Mar 2026)

- Spectris Easter Virtual Work Experience, Young Professionals (Apr 2025)

Achievements

- Recipient, University of Sheffield School of Computer Science Academic Achievement Scholarship (2025/26).
- Attended NSSC 2026, participating in machine-learning rocketry simulation activities and meeting space-sector organisations.
- Member of Sheffield Space Initiative; attended talks on orbital simulation, telescopes and astrophotography.
- Former Seren Network member and current Social Mobility Foundation member.