

Alfie Rayner

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Education

University of Warwick

MEng Computer Science

Coventry, United Kingdom

Sep. 2024 – Jul. 2028

- Key modules: Programming in Java (78%), Database Systems (74%), Calculus & Linear Algebra (73%), Computer Networks (72%).

Brighton College

Academic and Music Scholarships

Brighton, United Kingdom

Sep. 2022 – Jul. 2024

- A Levels: A* Mathematics; A in Further Mathematics, Physics and History.
- GCSEs (Hurstpierpoint College): Grade 9 in 10 subjects, including Further Mathematics.

Experience

Natural Fit

South East England, United Kingdom

Software & Systems Developer

May 2026 – Present

- Designed and shipped a full-stack tour booking platform that took 400 bookings in its first hour live, engineering a web API with availability validation, race-condition-safe writes and calendar/email integration.
- Built a digital signage system showing live class schedules on screens throughout the clubs, with a backend that aggregates data from the club management API and serves every screen from a single cached feed.
- Automated staff scheduling by programmatically writing rota availability to the club management API and syncing the class timetable into staff calendars, eliminating recurring manual data entry across sites.

Projects

"First Chair" – Optimal Ski Day Planner | Python, PuLP, HTML, MapLibre

Mar. 2026 – Present

- Formulated planning a ski day as a time-budgeted arc orienteering problem, building routable graphs of pistes and lifts on demand for 3,000+ ski areas worldwide from OpenStreetMap.
- Proved optimality with an exact ILP across 300+ objective instances, then built a simulated annealer reaching within 6% of proven optimum in 8 seconds, a median 15% better than a greedy baseline.
- Built and self-host an interactive 3D map UI animating the planned day over real terrain.

Airport Simulation – Group Project | Java 21, JavaFX, Git, JUnit 5, Maven

Jan. 2026 – Mar. 2026

- Designed and built the entire user interface for a multi-developer airport simulation; **won the cohort award for Best User Interface.**
- Implemented an interactive 3D model of the airport alongside statistical dashboards visualising simulation output through charts and aggregated performance data, built to accessibility standards.
- Agreed data contracts with the simulation engine developers early, integrating continuously through Git branches and code review across Agile sprints.

alfierayner.com | Next.js, Node.js, PostgreSQL, Nginx

Aug. 2025 – Present

- Built and maintain a full-stack web application: Next.js frontend with interactive elements, animations and third-party integrations including Spotify for dynamic content.
- Wrote a backend service and PostgreSQL schema for a private photograph library behind secure authentication; self-hosted on Linux behind Nginx with SSL, handling deployment and server administration personally rather than relying on managed hosting.

Astro Pi Mission Space Lab – Team Lead | Python, OpenCV, Raspberry Pi

Oct. 2023 – Feb. 2024

- Led a team writing autonomous Python that ran unattended on a Raspberry Pi aboard the ISS, with no opportunity to debug once deployed.
- Built an open-source OpenCV pipeline using ORB feature matching to stitch sequential frames and compute NDVI per pixel, measuring vegetation decline around Istanbul's new airport.

Technical Skills

Languages: Java, Python, JavaScript, C, SQL, PHP

Backend & Data: Node.js, Spring Boot, Flask, PostgreSQL, REST APIs

Frontend: React, Next.js, JavaFX

Infrastructure & Tooling: Linux, Nginx, Docker, Git, Maven, JUnit, Google Apps Script

Training: DeepLearning.AI Neural Networks and Deep Learning (Andrew Ng)

Activities and Interests

Marketing Officer, Warwick Polo Club. Summited Mt. Kilimanjaro, raising £1,500 for Alzheimer's Research UK. Piano (ARSM Diploma), photography, skiing, football, travelling.