

Patrick Hume

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EDUCATION

- 2020 - 2023 **The University of Manchester** BSc(Hons) Computer Science (Exp. First Class)
Achieved over 85% in *Programming Languages & Paradigms*, *Algorithms & Data Structures*,
Fundamentals of Computer Architecture, and *Fundamentals of Computer Engineering*.
- 2018 - 2020 **Jesmond Park West Academy** A-Levels
- | | |
|---------------------|------|
| Mathematics | (A*) |
| Computing | (A) |
| Physics | (A) |
| Further Mathematics | (B) |
- 2012 - 2018 **Heaton Manor School** GCSEs
- Six grade 9s including Computer Science, Mathematics, and Physics.
A* in Further Mathematics.

PROJECTS

- 2023 - 2023 **HikeUK Web App** *Next, Typescript, React, MUI, Tailwind* [Live Demo.](#)
Currently developing a mapping web-app *HikeUK* using Next and OpenLayers, styled with MUI and Tailwind. Used OpenStreetMaps and GraphHopper APIs to implement detailed map features and routing. Set up accounts using Google Identity's authentication service.
- 2022 - 2023 **Terrain Generation Application** *C++, OpenGL*
Developed an extensive terrain generation application in C++ using OpenGL. Simulated rainfall erosion to add realism to user-shaped terrain. Developed an algorithm to identify and texture rivers and lakes. Implemented model exporting to OBJ & GLTF formats.
- 2022 - 2022 **Detail-Based Tessellation Experiment** *C++, OpenGL, GLSL* [Documentation.](#)
Wrote a C++ application capable of performing detail-based optimisation of 3D terrain models. Increased understanding of low-level OpenGL and GLSL shader pipelines.
- 2022 - 2022 **AI Hex Game Player** *C++, Team Project*
Worked with 2 others to develop a C++ application capable of playing the board game *Hex* (an ultra-weakly solved, tile-based board game). Harnessed C++'s memory management tools to produce a performant AI capable of beating a human player. Learnt to create a modular, manageable code-base using inheritance and template classes.
- 2022 - 2022 **Eventlite Contribution** *Java, Testing, Open Source, Team Project* [Eventlite Repo.](#)
Worked in a team of 7 contributing to Eventlite, an open-source Java code-base. Used Spring to serve data through JSON via RESTful API queries. Additionally implemented front-end features using Thymeleaf to serve dynamic web-pages. Practiced test-driven development, writing custom unit and integration tests using Junit and Hamcrest.
- 2021 - 2022 **Stendhal Contribution** *Java, Testing, Open Source, Team Project* [Stendhal Repo.](#)
Contributed to a 10,000 line open-source Java code-base in a team of 6 people. Used Eclipse, Ant, JUnit and Jenkins to write unit and integration tests before implementing game-play features. Learnt how to make reasonable time estimates for development as a team.
- 2021 - 2021 **3D Renderer** *C++, SDL* [Documentation.](#)
Wrote a 3D renderer from scratch using C++ and SDL. Increased understanding of rendering principles, matrix transformations, screen buffering, lighting, and model loading.
- 2020 - 2021 **Online Party Game** *Javascript, CSS, Node, Socket.io, Team Project*
Led a team of 7 to develop a browser-based online party game called *MicDrop*. Designed intuitive pages using Bootstrap and Animate CSS. Handled client-server communications using Node and Socket.io to allow players to join sessions and interact in real time.