Patrick Hume

patrickhume | patrickhume.vercel.app | patrick-hume | patrick.hume31@gmail.com | +44 7840 035343

Education

2020 - 2023 **The University of Manchester** BSc(Hons) Computer Science (Upper Second-Class Honours)

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 – Present **HikeUK Web App** *Next, Typescript, React, MUI, Tailwind* Site Demo.

Currently developing a mapping web-app *HikeUK* using Next and OpenLayers, hosted on Vercel and styled with MUI and Tailwind. Using OpenStreetMaps and OpenRouteService APIs to display detailed map features and routes.

2022 – 2023 **Terrain Generation Application** *C++, OpenGL, GLSL, Eigen* Documentation.

Developed a terrain generation application in C++ using OpenGL and Eigen which includes: hand-modelling of terrain using gaussian interpolation, increased model realism by simulating rainfall erosion, river and lake generation based on simulation data, automatic texturing, and model exporting to OBJ & GLTF formats. Learnt to manage a large codebase as well as maintain extensive project documentation.

2022 – 2022 **Detail-Based Tessellation Experiment** *C++, OpenGL, GLSL* Documentation.

Developed a C++ application capable of performing detail-based optimisation of 3D terrain models, using GLSL tessellation shaders to simplify terrain based on their complexity. Increased understanding of low-level OpenGL and GLSL shader pipelines.

2022 – 2022 **Hex Game AI** *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 though 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 rendering application using C++ and SDL, implementing. See documentation for more info.

2020 – 2021 **Micdrop Party Game** *JavaScript, Node, Socket.IO, Bootstrap, Team Project*

Developed a browser-based online party game called *MicDrop*, working with 6 others. Personally handled client-server communications using Node and Socket.IO to allow players to join sessions and interact in real time. Increased understanding of client-server programming.

2019 – 2020 **Browser Game Development** *JavaScript, AJAX* Game & Documentation

Developed a top-down shooter game which runs in the browser. Implemented collision detection, A* path-finding, level-editing, and lighting in JavaScript. Used AJAX to implement level saving and loading from the server. Increased proficiency writing object-oriented JavaScript.

Skills

Programming Languages	C/C++, JavaScript, Typescript, Python, Java, PHP
Libraries	(C++) OpenGL, SDL, Eigen, (JS) React, Socket.IO, JQuery, (CSS) Tailwind, Bootstrap.
Frameworks	(JavaScript) Next, (Java) Spring, Spring Boot
Development Tools	Git, Jenkins