

JOSEPH HALFPENNY

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Introduction

Enthusiastic computer science postgraduate and skilled full-stack developer with expertise in **Python: Flask** and **Django**, **JavaScript: Express.js**, **Node.js**, and **React.js**. Experienced in designing and managing databases using **SQL** with **PostgreSQL** and **SQLite**, and in creating **RESTful APIs**. Proficient in **Git**, **Docker**, **Gunicorn** and **Nginx**.

Projects

[Family Tree Web Application](#) | *Python, Flask, Javascript, React.js, SQLite, NGINX, Gunicorn, Docker*

May 2025 - Present

- Developed a full-stack family tree application showcasing 120 family members of famous individuals across 8 families, enhancing user engagement through an interactive design and comprehensive data integration.
- Created the frontend with React using material UI and React Flow for interactive tree visualisation.
- Engineered an API backend using Flask-RESTful, prioritising efficient data processing functions.
- Designed and constructed a relational database in SQLite to map and manage complex family relationships, reduced query times by 80% by loading related data into memory with one joined load query.
- Containerised the application stack using Docker for replication on other machines and ease of deployment.
- Deployed on a linux based VPS, utilising Nginx as a reverse proxy to manage client requests over https, serve static files, and execute calls to the backend.
- Increased the backend request speed by 83% compared to a previously implemented two server system.
- Integrated Gunicorn as a production-grade WSGI server to enable concurrent request handling, boosting backend scalability and reducing response latency under load.

[Global Emissions Visualiser](#) | *JavaScript, Node.js, Express.js, Chart.js, amCharts*

August 2025 - September 2025

- Built a web application that integrates API data from over 11,000 global sensors and 300 satellites to visualise live greenhouse gas emissions.
 - Fetch and clean data for the selected country using Node.js.
 - Optimised the user experience by reducing the client data load by 67% using server-side preprocessing, enabling fast real-time emissions insights at the country level.
 - Implemented data visualisations using Chart.js, and an interactive globe using amCharts.
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Skills

- **Programming:** Python, Flask, Django, JavaScript, HTML, CSS, Node.js, Express.js, React.js.
 - **Databases:** SQLite, PostgreSQL.
 - **Developer Tools:** Git, Github, Postman, Visual Studio Code, Nginx, Gunicorn.
 - **Soft Skills:** Efficient communication, rapid understanding of others' ideas, disciplined project management, adaptable problem-solving.
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Education

BSc Computer Science (2.1) | University of Leeds | September 2020 - July 2023

- **Relevant modules:** Networks, Distributed Systems, Secure Computing, Web Services.

A-Levels | Graveney Sixth Form | September 2016 - July 2018

- **Grades:** French (A), Maths (B), Physics (B), Chemistry (C)
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Languages & Interests

- Languages: English (Native), French (Fluent)
- Interests: Football, tennis, cooking, music, cinema