

JOSHUA COLES

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in LinkedIn

Full-stack Developer

WHO AM I?

Software Development is a profession and a hobby. My drive over 10 years as always been addressing real problems that I encounter with the tools to hand — treating specific technologies as secondary to understanding the organisational context of the problem. In my work at the ONS, I was responsible for software delivery, helping to manage a large team of contributors under a tight timeframe. Throughout my work I have developed a love and appreciation for strongly typed languages and maximising the compile-time assurance that can be achieved. This has consistently paid dividends in greater development velocity, and the elimination of issues before shipping.

Typescript ██████████
React ██████████
Rust ██████████
Python ██████████
Git ██████████
Scala ██████████

EXPERIENCE

Academic Year
2023/24

Final Year Project, AI Applications in Lagrangian Physics

University of Bath

My project focused on incorporating Lagrangian Mechanics into physics-informed neural networks. My key contributions include,

- Writing the core physics procedures in JAX to improve correctness and to allow for their use in loss functions and reducing runtimes by 10^4 .
- Creating and optimising physics informed loss functions for speed and utility in training.

The completed report can be found [here](#).

JAX / Neural Networks / Loss functions / Numpy / Flax / Tensorflow / Python

Summer 2023

Developer

Amphora

I lead efforts exploring the feasibility and application of AI based features in the main product.

- Implementing vector based search and retrieval-augmented generation into the application in a non-intrusive manner.
- Presenting work to customers and facilitating input on direction and feature fit.

Langchain / Weaviate / Python

2022 – 2023
part time

Software Developer

Office for National Statistics

For my placement I joined a team working on software for processing the results of the 2021 Census. After the end of my placement I was kept on to assist with the next phase of product development and solution design. Key contributions include,

- Taking a leading role as release manager for the product and was heavily involved in requirements gathering for the new features.
- Developing tools for debugging and observability in sensitive production environments.
- Restructuring a core service to decrease code duplication and increase test & type coverage.
- Designing solution architectures for future project development.

This role gave me an appreciation for how the interpersonal aspects of successful team are crucial for the overall success of a project. This was especially important when interfacing with the business side of the organisation on the direction of the project.

React / Express / Jest / Cypress / Redis / SQL / Postgres / HBase / Cloudera / Jenkins / Docker / Typescript / JavaScript / Linux / Microservices / Agile / Scrum

2017 – 2021
Holidays & Part time

Software Developer

Amphora

I focused on independent exploration and investigation of new technologies.

- Implementing and maintaining SAML based customer access mechanism for confidential documentation.
- Designing subscription management product using Wordpress as a Headless CMS for presentation under multiple service offering.

SAML / Groovy / Java / Ruby on Rails / Ruby

2011 — present

Ongoing Personal Projects

My latest personal projects are focused on data analysis on different aspects of my life. This is done with a strong focus on self-hosting and privacy, giving me experience running services across a range of computers. Key components include

- Self hosted Gitea and CI/CD for development.
- Centralised authentication.
- Centralised database for cross-domain analytics.

A history of these is available on my [GitHub](#) or [personal Gitea](#).

`Rust / CI/CD / Postgres / Caddy / Docker / System administration of internet connected servers`

EDUCATION

2019 – 2024

MSc Mathematics and Physics (Hons)

University of Bath

Expected classification: 2:1

Graduated 2019

Prior Qualifications, Graduating 2019

Reading Blue Coat School

4 A Levels: A* Maths, A Further Maths, A Physics, A Chemistry

GCSEs: 1 A* with distinction, 8 A's, 2 A's, 1 B. Including A* with distinction in Further Maths, A's in Maths, Sciences, English and Computing.

ADDITIONAL QUALIFICATIONS AND TRAINING

Better Conversations — 2022
ISO9001 and ISO27001 training — 2018

INTERESTS

Long distance running; politics and governance and the applications of technology therein; committee member of Philosophy Society at University.

REFERENCES

Employment
Reference

Mathew Cooke

Director of Operations, Amphora Research Systems

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Charater
Reference

Steve Gibbard

DevOps Technical Lead, Office for National Statistics

Line manager and Tech Lead while at Office for National Statistics

DevOps Technical Lead, Office for National Statistics

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Academic
Reference

David Tsang

Senior Lecturer, Department of Physics, University of Bath

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[Research Profile](#)