

JOSHUA COLES

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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.



EXPERIENCE

Present	Software Developer After I have completed my degree I intend to return to the Better Conversations Foundation to continue the work I started the previous year as I look for a longer term role.	Better Conversations Foundation
Academic Year 2023/24	Final Year Project, AI Applications in Lagrangian Physics 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 a factor of 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 / Keras / Python	University of Bath
Summer 2023	Software Developer Once I completed my work with Amphora, I moved to work at a connected non-profit, Better Conversations Foundation, working on their e-commerce and scheduling systems and initiating development on a real-time coaching flight-plan solution. • Implementing key components of purchase flows, scheduling, and participant management. • Prototyping real-time coaching flight-plans to allow coordination between Facilitators as sessions progress Ruby on Rails / Stripe	Better Conversations Foundation
Summer 2023	Software Developer I lead efforts exploring the feasibility and application of AI based features in the main product. • Integrating 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	Amphora
2022 – 2023 part time aside studies 2021 – 2022 placement year	Software Developer 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. In this role I worked with sensitive data from the Census in isolated production environments and thus obtained SC clearance. 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, greatly increasing our ability to diagnose production issues quickly. • Designing architectures for the next stage of the project to address additional business needs.	Office for National Statistics

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 worked independently to explore and investigate new technologies including and

- Creating 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](#), along with this CV and build process.

Rust / CI/CD / Github actions / Postgres / Caddy / Docker / Docker Compose / System administration

EDUCATION

2019 – 2024

MSc Mathematics and Physics (Hons) (Sandwich)

University of Bath

Expected classification: 2:1

Placement with the ONS between academic years 2 and 3.

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

Steve Gibbard

DevOps Technical Lead, Office for National Statistics

Line manager and Tech Lead while at Office for National Statistics

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Employment
Reference

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Academic
Reference

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[Research Profile](#)