

# JOSHUA COLES

## Full-stack Developer

📍 South England  
@ me at this domain

Personal information  
omitted in web version

🌐 Personal Gitea  
🔗 github.com/joshuacoles  
in LinkedIn

### 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                                                                 | <b>Software Developer</b><br>After I completing my degree I returned to the Better Conversations Foundation to continue the work I started the previous year for the non-profit as I look for a longer term role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Better Conversations Foundation</b> |
| Academic Year<br>2023/24                                                | <b>Final Year Project, AI Applications in Lagrangian Physics</b><br>My project focused on incorporating Lagrangian Mechanics into physics-informed neural networks. My key contributions include, <ul style="list-style-type: none"><li>• 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 <math>10^4</math>.</li><li>• Creating and optimising physics informed loss functions for speed and utility in training.</li></ul> The completed report can be found <a href="#">here</a> .<br>JAX / Neural Networks / Loss functions / Numpy / Flax / Tensorflow / Keras / Python                                                                                                                                                                                                          | <b>University of Bath</b>              |
| Summer 2023                                                             | <b>Software Developer</b><br>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. <ul style="list-style-type: none"><li>• Implementing key components of purchase flows, scheduling, and participant management.</li><li>• Prototyping real-time coaching flight-plans to allow coordination between Facilitators as sessions progress</li></ul> Ruby on Rails / Stripe                                                                                                                                                                                                                                                                                                                        | <b>Better Conversations Foundation</b> |
| Summer 2023                                                             | <b>Software Developer</b><br>I lead efforts exploring the feasibility and application of AI based features in the main product. <ul style="list-style-type: none"><li>• Integrating vector based search and retrieval-augmented generation into the application in a non-intrusive manner.</li><li>• Presenting work to customers and facilitating input on direction and feature fit.</li></ul> Langchain / Weaviate / Python                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Amphora</b>                         |
| 2022 – 2023<br>part time aside studies<br>2021 – 2022<br>placement year | <b>Software Developer</b><br>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, <ul style="list-style-type: none"><li>• Taking a leading role as release manager for the product and was heavily involved in requirements gathering for the new features.</li><li>• Developing tools for debugging and observability in sensitive production environments, greatly increasing the our ability to diagnose production issues quickly.</li><li>• Designing architectures for the next stage of the project to address additional business needs.</li></ul> | <b>Office for National Statistics</b>  |

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 / Redux / 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

Classification: 1st Class Honours

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

Available upon request