

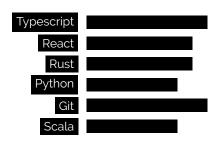
# Full-stack Developer





# 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

**Better Conversations Foundation** 

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.

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 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 / Python

Summer 2023

## **Software Developer**

**Better Conversations Foundation** 

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

Summer 2023

#### **Software Developer**

**Amphora** 

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

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. 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.
- Restructuring a core service to decrease code duplication and increase test & type coverage.
- · Designing architectures for the next stage of the project to address additional business needs.

2022 - 2023

2021 - 2022 placement year

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 <u>GitHub</u> or <u>personal Gitea</u>, along with this CV and build process.

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

INTERESTS

Better Conversations — 2022 ISO9001 and ISO27001 training — 2018 Long distance running; politics and governance and the applications of technology therein; committee member of Philosophy Society at University.

## REFERENCES

**Employment** 

**Steve Gibbard** 

**DevOps Technical Lead, Office for National Statistics** 

Reference Line manager and Tech Lead while at Office for National Statistics

DevOps Technical Lead, Office for National Statistics Email: steve.gibbard@ons.gov.uk

**Employment** 

**Mathew Cooke** 

**Director of Operations, Amphora Research Systems** 

Reference Email: mathewc@amphora-research.com

Contact Number: +44 1344 28863

Address: Molly Millars Lane, Unit 6, Wokingham, RG4

Academic Reference **David Tsang** 

Senior Lecturer, Department of Physics, University of Bath

Project Supervisor

Email: dcwt21@bath.ac.uk

Research Profile