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Profile

I am a long term software engineer looking for a **remote** job while I am based in Morzine where I moved to pursue a mountain lifestyle. While I am keen to learn new skills I also have strong existing skills with **C++**, **Rust**, **TypeScript**, and **Python**. I enjoy working on both frontend and backend solutions, although my expertise is with the backend. I am pragmatic in finding the most appropriate solutions, while keeping the codebase maintainable.

Biosite Systems Ltd

Biosite Systems Ltd is a company specialising in biometric security solutions for construction sites. In my 11 years at Biosite Systems I have achieved a great deal of professional development, both in technical and non-technical skills. Within a fast growing company I have experienced development at all scales and how to overcome the challenges of growth.

2022–Present Backend Technical Lead

As Backend Technical Lead I became ultimately responsible for all architecture and technical decisions in the backend. While many of these can be entrusted to the feature development teams, larger decisions about architecture and technology usage fall to me.

I continue to work closely with the engineering teams to provide technical insight and assistance with large scale projects including:

- Implementing Domain Driven Design (**DDD**) across complex areas of the product while maintaining compatibility with the existing codebase
- Integrating **Sentry** across the backend to improve traceability and allow us to be confident we were focusing on the most prevalent issues
- Migrating our infrastructure from Digital Ocean to **AWS**
- Designing, implementing, and deploying **SSO** support across our client software
- Leading architecture conversations across the company (and beyond when necessary)
- Technical design and oversight of the next iteration of our **edge computing** project written in **Rust**
- Design and implementation of an updated low level auditing system
- Overhauling the internationalisation system to utilise **type safety**, preventing common developer errors with translation

2017–2022 Lead Software Engineer

In my position as a Lead Software Engineer I began taking responsibility for many of the **Agile** processes in addition to stepping up as a mentor, role model, and leader.

As a mentor I spent much of my time teaching numerous developers by pair programming on the core product written in **C++**, **TypeScript**, **React**, and **PostgreSQL**.

As a role model I was keen to champion Test Driven Development (**TDD**) and Domain Driven Design.

As a leader I had a hands on approach in numerous projects including:

- Migrating the codebase from **Mercurial** to **git** and **Github Actions**
- Rewriting the development environment with **Docker** and **Python**
- Containerizing the core product using **Docker**
- Designing and implementing an ETL pipeline in C++ and PostgreSQL to enable a **Business Intelligence** solution
- Implementing a public **Event Driven** subscription API with **Websocket** via **nodejs** with **TypeScript**
- Creating a cross-platform build pipeline for **Raspberry Pi**
- Modernising the end to end testing with **Cypress**
- Implementing a **PC/SC** interface for card scanners on automatic kiosks

With COVID-19 hitting in this period I started leading the team in successful **remote working** practices and avoided any drop in productivity.

2015–2017 Senior Software Engineer

Moving to Senior Software Engineer brought new challenges:

- In depth work on the **C++** synchronisation engine for the **distributed systems** behind the core product
- Replacing Ethernet fingerprint scanners with biometric hardware controlled via **Raspberry Pi**
- Creating an ANPR traffic flow solution, from low level hardware interaction to high level system design
- Advocating for and implementing nightly end to end testing using **Robot Framework**
- Leading development on fully customisable theming for the online portal

2014–2015 Software Engineer

Developing Biosite's core product with **C++**, **AngularJS**, and **PostgreSQL** lent itself to learning quickly on the job. Originally part of a team of 4 developers there was a lot of responsibility from the start. Shipping numerous parts of our products was my responsibility as well as being on call to solve technical customer problems.

Education

2010–2014 PhD Engineering *University of Warwick*

A system for remotely taking high velocity, large scale, Particle Image Velocimetry measurements in a hostile environment. I utilised a network of computers spread across a large anechoic wind tunnel to measure turbulence in the wake of a large scale jet engine. Designing the computer system to interface directly with the measurement hardware (namely four high framerate cameras, three Nd:YAG lasers, and numerous servos) allowed the system to safely be operated semi-automatically from a control room. Much of my PhD was on site, having to adapt to problems and alterations in the specifications at short notice with limited resources to hand.

2006–2010 MEng Engineering - 2:1 (Hons) *University of Warwick*

Selected Projects

2020–2023 tomb-helper [zed0/tomb-helper](https://github.com/zed0/tomb-helper)

A **Rust** tool designed to help speedrunners practice by manipulating the memory of the game they are playing to allow flying, resetting the player position, and skipping cutscenes.

2019–2022 Advent of Code [zed0/advent-of-code](https://github.com/zed0/advent-of-code)

Originally to learn **Rust**, these are solutions for all 50 stars of Advent of Code for the last 5 years.

2015–2019 [zed0.co.uk/clang-format-configurator](https://github.com/zed0/clang-format-configurator) [zed0/clang-format-configurator](https://github.com/zed0/clang-format-configurator)

A configuration tool for **clang-format**. Written in plain **Javascript** with **express** and **nodejs**.

2018 coNTRoller-overlay [zed0/coNTRoller-overlay](https://github.com/zed0/coNTRoller-overlay)

A display of inputs to a Nintendo 3DS acquired via NTR debugging information. Written in **Python** with PyNTR and Pygame.

2013 [zed0.co.uk/crossword](https://github.com/zed0/crossword) [zed0/adobe-crossword](https://github.com/zed0/adobe-crossword)

A playable crossword based on XKCD's "Cryptic" solving password clues from the Adobe password leak of 2013. Written in **Javascript** and **Python**.

Interests

Skiing I am a passionate skier who learned in Scotland. After completing my PhD I spent a winter in New Zealand completing the NZSIA level 2 qualification. In 2023 I relocated to Morzine in the French Alps to ski during my free time.

Climbing When there's no snow both indoor and outdoor rock climbing are a welcome alternative to skiing.

Hiking After taking a Mountain Leadership training course from the British Mountaineering Council I keep in touch with my university hiking club and regularly meet up for walks.

Lego I regularly display my [Lego collection](#) at local shows and meet with the local community.