Michael Fortune

Software and Data Engineer

Christchurch, NZ | michaelfortune91@gmail.com | mikefortune.xyz | github.com/fortune1991

Summary

I have 10 years engineering and project management experience delivering complex, multidisciplinary design solutions in the building performance sector. This work demanded collaborative problem-solving, innovative engineering, and technical rigour. Along the way, I developed proficiency in major programming languages and data engineering through building process automations, analytics workflows, and custom energy modelling software. I was fortunate to receive two internal awards from WSP for client management and international collaboration. I'm now eager to bring my blend of technical expertise, teamwork, and continuous learning to software engineering teams at the intersection of data and machine learning.

Skills and Traits

Python | AWS | Bash/zsh | NoSQL | SQL | Docker | Github | CI/CD

PM and Commercial Leadership | Excellent Technical Communicator | Confident with Clients

Libraries and Frameworks

AWS Boto3 | FastAPI | Matplotlib | Pandas | Grafana

PyTest | Numpy | Streamlit | Textualize | SnowFlake

Recent Work Experience

Position: Senior Mechanical Engineer to Principal Sustainability Consultant @ WSP (Christchurch, NZ)
Dates: July 2019 - December 2024

- Lead engineer on multiple projects, coordinating teams to deliver on time and within budget.
- National technical lead in building energy modelling, mentoring graduates and developing Python tools that standardised results processing for faster, more consistent output.
- Oversaw licensing, deployment, troubleshooting, and compliance of the software tool, IES Virtual Environment for our national team.
- Built strong client and team relationships through clear, regular communication and expectation management.

Project highlights:

Australian Antarctic Division - New Station Masterplanning

- Mechanical engineering and energy modelling lead for ten proposed buildings.
- Coordinated a remote team whilst working directly with the client on-site in Tasmania.
- Developed a custom (Python) Renewable Energy modelling tool for Antarctica. Outputs within a ±5% margin compared to expensive commercial equivalents. Tool was made to quickly and easily apply to other sites. Client requested use on further projects.

Queenstown Lakes District Council - Luggate Hall

- Lead Mechanical Engineer on New Zealand's first certified commercial Passive House.
- Delivered an ultra-low-energy design that challenged New Zealand's outdated building code, securing negotiated approval with the local authority for our innovative approach.
- The final design reduced energy consumption by 63% compared to standard practice.

Nationwide School and Hospital Design

- Energy modelling lead for various schools and hospitals across New Zealand.
- Models successfully passed rigorous peer review by the New Zealand Green Building Council against stringent standards.

Previous Work Experience

Position: Graduate to Senior Mechanical Engineer @ WSP (Bristol, UK)
Dates: September 2014 - May 2019

- Enthusiastic team member privileged to work on WSP's high profile projects in the UK and abroad
- Trusted with a significant level of responsibility early on in my career
- Undertook a Master's degree part-time, sponsored by WSP. Alongside the new technical knowledge, I learnt how to manage many competing deadlines and responsibilities during this process

Project highlights:

FAANG client - data centre sea water cooling system (Finland)

- Worked as part of a small team to design a seawater intake and forwarding station, providing additional cooling capacity for a data centre expansion.
- Coordinated with specialist suppliers and the client to deliver a robust, resilient design tailored to the challenges of a Nordic environment.

UK Government - UK National Holocaust Memorial

- Lead Mechanical Engineer on a high-profile, culturally sensitive UK government project.
- Worked alongside internationally renowned architects and designers who challenged conventional practices, driving the development of innovative and bespoke engineering solutions

Side Projects

ICU Grow: An IoT enabled, automated greenhouse, designed for my garden

- Microcontroller based solution programmed using MicroPython and Raspberry Pi Pico.
- Prototype constructed using a miniature Greenhouse. Demonstration video available here.
- Device records temperature, humidity and light levels, stored on MicroSD..
- Physical actuation of roof provided using motor drivers. RGB LED indicator switched to indicate when plants need watering, heating is required or cooling fan is in operation
- Implemented an asynchronous code structure to ensure non-blocking operation and robust error handling on the device.

Money Pots: An expenses and budget tracking tool designed for my year away travelling. Available here.

- Built a data pipeline on AWS, using MySQL for storage and a Grafana dashboard for visualisation with automated API updates of dashboard images.
- Developed a terminal based UI with Textualize and extended it for browser hosting.

Education

MSc, Environmental Design & Engineering, University College London **Completed 2016**

Completed a demanding Master's degree at a world top 10 university whilst working full-time. Dissertation focused on a critical analysis of the UK Government's SBEM energy modelling software, including review of its C++ source code to identify and investigate functional errors in it's outputs.

BEng, Building Services Engineering, Northumbria University **Completed 2014**

Achieved an Upper Second Class Honours with modules spanning Mechanical, Electrical, and Renewable Energy Engineering, with a focus on applications in the Built Environment.

Self Learning and Certificates

Topics: Computer Science Fundamentals, Data Structures & Algorithms, Machine Learning, Artificial Intelligence, Cloud Computing, Data Science and Engineering

Certificates: Harvard University: CS50X, CS50 Python; AWS: Cloud Practitioner Essentials; Kaggle: Intro to Pandas, Intro to Machine Learning; Hugging Face: AI agents foundations