JESSE WOOD

Software Developer

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PERSONAL STATEMENT

My goal is to leave the world a better place than I found it. I plan to bring that goal into reality by creating technology which improves the quality of life. These goals have motivated my passion for software engineering and the open-source community as a tool for sharing knowledge. This objective has led me to a voluntary internship at NIWA, collaborating with scientists and physicists in their research on our oceans and atmosphere to the world. Software is a medium to explore my scientific curiosity and contribute a meaningful change.

EXPERIENCE

2020 – Now
part time

Software Developer Internship — **Niwa**

My work was a multi-disciplinary collaboration to implement an end to end best practice OGC Standard software. We utilized an open-source technology stack to create web services that queried a database on a Linux cloud server. Data understanding was an important area of this work. Without previous expertise in Geo-Physics or Biology, I learned to extract requirements for software from across disciplines. I documented and presented my work to non-technical users through best practise agile methodology.

The SARS-2 COVID-19 pandemic obstructed my ability to work onsite. During this time I learnt how to work remotely from home, utilizing industry-standard tools like Microsoft Teams for communication and Pulse Secure for offsite encrypted access to the NIWA intranet. I had to adapt to the new environment of working from home and remain productive.

`postgres / mapserver / linux`

2018 – 2019

Bartender, Barista, Mixologist, Maitre D' — **St. Johns Bar and Eatery**

In this role, I learnt to organise a team to work efficiently. As Maitre D', I developed a holistic approach to ensuring that the needs of every customer were met. Equal attention had to be provided to maintain an excellent quality of service. Here I learnt how to compensate diners who experienced mistakes or unsatisfactory wait times. This role helped me understand how to deliver value to a customer and to be honest regarding roadblocks.

`conflict resolution / health and safety / customer service`

2012 – 2018

Bartender, Barista, Kitchenhand — **Mac's Brewery**

This was my first job. I upskilled over time to learn all aspects of the trade. Building strong soft skills in communication, event management, and conflict resolution. This was a fast-paced environment that involved risk management, which often led to negotiations with disorderly customers. I learnt to work under pressure and remain calm in combative situations.

`time management / communication`

EDUCATION

2016 – Now

Bachelor of Engineering (Hons) — **Victoria University of Wellington**

The bachelor degree is majoring in Software Engineering. I have taken a particular interest in Machine Learning and Data Science. This field of study compliments my industry work experience with NIWA.

Papers: Artificial Intelligence, Database System Engineering, Human Computer Interaction
Roles: volunteer note-taker
Awards: Victoria Excellence Scholarship

N.B Attatched to this CV is a letter commenting on my most recent grades.

2011 - 2015

NCEA Level 3 endorsed with Excellence — **Rongotai College**

Subjects: Computers, Physics, Calculus, English, Graphics, Music
Roles: Prefect, UN Youth Ambassador, Jazz Band, Production Band
Awards: Scholarship English

PROJECTS

Advent of Code 2020
Advent of Code is an Advent calendar of small programming puzzled that can be solved in a language of your choice. I chose to solve the 2020 AOC with Haskell. Functional programming is less prone to errors because functions cannot have unintended side effects. This is important for a competition where time is an important factor. The competition penalized incorrect submissions, so it was important to validate code on test cases, before submitting a final answer.
`Haskell / Problem Solving / Competition`

Data Ingestion
This project involved an ingesting a Benthic Biodiversity into the New Zealand Ocean Data Network (NZODN). NZODN is an open-source technology stack that implements OGC standards, with tools such as GeoServer for providing web services to display maps and GeoNetwork as a CMS for a metadata catalogue. This software is configured to communicate with a Postgres database which stores the geospatial data.
`Python / Postgres / GeoServer`

MCS
The Mission Control System was a software interface that runs on a laptop to display telemetry information from a rocket. It also presented the Monte Carlo simulation data on the projected landing locations. This was developed as a group using a blend of agile and scrum methodologies. We strived for the software quality attribute of portability. To do this we implemented an open-source web map service that can display locally stored map data for offline usage.
`React.js / Mapserver / LeafletApache`

WORKSHOPS

FOSS4G
The FOSS45 SoTM conference was held in November 2020. Due to the virus, local hubs for the international event were held across the planet. This conference covers cutting edge open-source GIS software. A former developer at MapBox found out there software was being used for drone strikes in the middle east. An important take away from the conference was the ethics of the software we develop. As engineers, we may consider adding a "Don't Be Evil!" clause to our license to help open source developers sleep at night.

Python Data Ingestion
This was a two-day workshop hosted by Niwa in November 2020. The attendees were mostly data scientists and software developers. This covered using Python for Scientific Computing. We explored the Anaconda environment for Python development for package management. It can be used to replicate a python environment on another machine. Jupyter notebook is an important tool for Literate Programming, it can be used to merge documentation and codebases. This is incredibly useful for communicating codebases to non-technical users.

Databases 101
This was a workshop hosted by the Principal Technician of Fisheries at NIWA. There was an interesting discussion that compared RDBMS vs NoSQL databases. There is are certain tradeoffs between different software quality attributes, and risks involve getting vendor locked into proprietary cloud software like AWS or Azure. The workshop's attendees were mostly field scientists who are end-users of the database. As a software developer who creates and maintains these databases, it was useful to understand the goals of the end-users of the product.

TECHNICAL SKILLS

Scripting Languages
JavaScript (React, Angular, Vue), Java (Maven, Java 8), Haskell (Functional Programming), C (Networking), C++ (Unreal Engine)

Machine Learning
Python (Tensorflow), R (Visualization, Regression, Classification), Weka (Regression / Classification / Pipelines)

Databases
Firebase (cloud NoSQL database), Postgres (open source industry standard), Postgis (for geospatial data)

Workflow
Git (teamwork/VCS), LaTeX (technical writing)

HOBBIES

Debating
Public speaking, politics, philosophy, UN Youth Ambassador
Sciences
CS, AI, Robotics, Astrophysics, Psychology

Guitar
Classical, Jazz, Blues, Classic Rock
Sports
Canoe Polo, Table Tennis

REFERENCES

Andrea Mari - Research Software Engineer at *Niwa*
Andrea is my mentor at Niwa. He has introduced me to the software development processes at Niwa, including Jira and regular agile meetings. I am always excited to learn new concepts and to learn from his industry expertise as a software developer.

Tom Moorhead - Functions Coordinator for *Mac's Function Center*
My work under Tom taught me how to pay attention to detail and execute a plan. Often planning large scale events for several hundred people, everything had to be in order and well thought out ahead of time. We employed industry standards in catering and collaborated with the host to meet their vision for the event.

N.B Contact information is available upon request.