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 to publish their research on our oceans and atmosphere to a global audience. Software is a medium to explore my scientific curiosity and contribute a meaningful change.

EXPERIENCE

Software Intern - 2020 to Present - *NIWA* , Wellington, NZ

- Multi-disciplinary collaboration to implement an end to end best practice OGC Standard software.
- Open-source technology stack to create web services that queried a database on a Linux cloud server.
- Without previous expertise in Geo-Physics or Biology, Data Understanding was an important area of this work. We extracted requirements for software using the knowledge provided from other disciplines.
- Participate in weekly meetings to communicate progress. Documentation of work to non-technical users through best practise agile methodology.
- Work remotely from home due to the COVID-19 pandemic. Utilizing industry-standard tools (i.e, Microsoft Teams for communication and Pulse Secure for SSH).

Front of House - 2018 to 2019 - *St. Johns Bar and Eatery*, Wellington, NZ

- Upsell new products or promotions.
- Organise a team to work efficiently.
- Deliver value to a customer and to be honest regarding roadblocks.

Back of House / Front of House - 2012 to 2018 - *Mac's Brewery*, Wellington, NZ

- Upskilling to learn all aspects of the trade.
- Cope under pressure in a fast-paced work environment that involved risk management, i.e. negotiations with disorderly customers.
- Empathetic and Active Listening when dealing with confrontations.

EDUCATION

Bachelor of Engineering (Software Engineering) - 2016 to Present - *Victoria University of Wellington*

- Subjects were chosen to provide an academic background to supplement a full-stack developer. **Artificial Intelligence, Database System Engineering, Human-Computer Interaction, Professional Practise**
- Volunteer position communicating information to make the university accessible to a wider audience. **Note-Taker**
- Awarded to those who excelled in their secondary school studies. **Victoria Excellence Scholarship**

N.B The Head of School's commentary on my most recent grades is attached to this document.

NCEA Level 3 - 2011 to 2015 - *Rongotai College*

- These subjects provided the bedrock for a passion in Computer Science. **Computers, Physics, Calculus, English, Graphics, Music**
- Extra-curricular roles helped develop hone in public speaking and presentation skills. **Prefect, UN Youth Ambassador, Jazz Band, Production Band, Debating**
- This is an award for university level written communications skills given to secondary school students. **Scholarship English**

PROJECTS

Advent of Code
An advent calendar of programming puzzles that are language agnostic. The functional programming language Haskell was chosen. In Haskell, programs cannot store state so functions cannot have unintended side effects. Reducing the likelihood of errors meant solving problems faster. Incorrect submissions were penalized, so test cases were verified before submitting a final answer.

Data Ingestion
Ingesting Benthic Biodiversity data into the NZON portal. This is an open-source technology stack that implements OGC standards. It uses tools such as GeoServer to providing web services to display maps, and GeoNetwork as a CMS for a metadata catalogue. We configure the software to use a Postgres database storing geospatial data.

Mission Control System
Runs on a laptop in the field to display telemetry data from a rocket. It presents a Monte Carlo simulation data to predict possible landing locations. It was developed as a group using 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.

TECHNICAL TOOLS

Scripting: General knowledge of the fundamental principles and tradeoffs for a breadth and depth of programming languages. Consisting of both the Functional and Object Oriented paradigms, and a mix of High and Low-level languages. **JavaScript, HTML5, CSS, React, Angular, Vue, Java, Ruby, Haskell, Common-Lisp, C, C++**

Machine Learning: Practical experience implementing machine learning pipelines to produce business knowledge from real-world datasets. Use of scripting languages for preprocessing, exploratory data analysis, training and testing, and data visualization. **Python, Scikit-learn, TensorFlow, R, Weka**

Databases: Academic and practical knowledge in both SQL and NoSQL database systems. Created databases using cloud services that are utilized in full-stack applications. **Firebase, Postgres, Postgis, SQLite, MongoDB**

Workflow: Git an amazing tool for version control and agile documentation of development. It provides an excellent environment for a development community, working together asynchronously and remotely. **Git, Gitlab, Github, GitBucket, Jira, LaTeX, Markdown, PlantUML**

WORKSHOPS

FOSS4G SoTM
Due to the virus, local hubs for the international event were held. 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.

Python Data Ingestion
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 as it merges documentation and codebases.

Databases 101
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 (i.e., AWS, Azure or Firebase). As a developer who creates and maintains these databases, it was useful to understand the goals of the end-users of the product.

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 humbled to learn from his industry expertise as a software developer.

Tom Moorhead - Functions Coordinator at *Mac's Function Center*
We planned large scale events for several hundred people. 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.

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13 November 2020

Jesse Wood
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Tēnā Koe Jesse

On behalf of the School of Engineering and Computer Science, I would like to offer you a warm congratulations on achieving the grades COMP309: A, ENGR302: A and SWEN325: A

It gives the school great pride when students achieve academic success at this level. I am sure it has entailed a good deal of hard work on your part and is well deserved.

My colleagues and I will be happy to give advice on opportunities at both undergraduate and postgraduate levels and we look forward to supporting your future academic success.

We hope that you have a relaxing break over the summer holidays.

Ngā mihi

Dr. Stuart Marshal
Head of School