

Alex Brown

Part II Software Engineer @ University of Auckland

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I am a driven Part II Software Engineering student at UoA, with a keen interest in solving hard problems. I taught myself how to code in high school, and have loved it ever since. I learn independently at a rapid pace, shown by the breadth of my personal projects and the scale of my work at Comply Pro. I am looking for a challenging role where I can grow my skills and make a difference.

🎓 Education

University of Auckland – Bachelor of Engineering (Honours) – 9.00/9.00 GPA 2023 – 2026

- **Software Engineering Class Representative** (2024)
Advocating for 300 students across 4 courses, **resolving issues** through communication.
- **Teaching Assistant – ENGGEN 115** (2024)
Voluntarily answered student Q&A in 2023, which led to a paid TA role in 2024.
Helping dozens of students every day, facilitating weekly staff **debriefs**.
- **Science Scholars** (2023)
Engaged in various scientific discussions with professors and peers,
developed **scientific writing and research** skills with an [article analyzing recent CPU flaws](#).

🧰 Industry experience

[Comply Pro](#), Auckland – Software Engineer (intern) 2022 – present

Filling many roles across their codebases, including backend (**node.js + SQL**),
Web/Mobile (**Angular + Ionic + TypeScript**), and internal tooling (**Vue, node.js + SQL**).
Managing simultaneous feature **branches** in **Git**, performing regular **PR code reviews**.

Key achievements:

- Rewrote the [temperature probe UI](#) using **Web Bluetooth APIs**, by **reverse-engineering** the DishTemp protocol with **WireShark**. Used by thousands of customers every day.
- Added **2FA** to our Web apps using **Firebase Authentication**.
Improved security practices internally, and for several large clients.
- Rewrote **MS-SQL** server code and stored procedures for **PostgreSQL** migration. Changes reached every corner of the codebase, requiring a comprehensive **regression test suite**. Significantly cuts hosting costs, enabling product expansion into Canada.
- Spearheaded the **backend** of approval and permit workflows, a ["killer feature"](#) for Site App Pro that has attracted large international clients.

[Explore Group](#), Bay of Islands – Ferry crew, restaurant staff 2021 – 2022

Being a deckhand demanded **situational awareness**, **teamwork**, and clear **communication** with the skipper. As a kitchenhand, I learned the importance of **positive interactions** with customers, **handling complaints** effectively, and **working quickly under pressure**.

👥 Club projects

Auckland Program for Space Systems 2023 – present

Leading a satellite design team that won the APSS Mission Proposal Competition 2023.
Currently working on the upcoming "Kessler" satellite's **C++/FreeRTOS**-based firmware, by coordinating with a team, balancing strict **hardware requirements** and **tight deadlines**.

UoA Game Developers Guild 2023 – present

Passionate about Game development since high school. Formed a team at GDG, honed **project management** and **team communication**. Released 3 games in 2023, [one with 700+ plays](#). Experienced in Unity 3D (**C#**), Godot, and **OpenGL** programming (**Rust/C++**).

🏆 Achievements

- UoA Dean's Honours list – top 5% in Part 1 Engineering (2023)
- ENGGEN 115 – First in class award (2023)
- UoA [MAX program](#) – First in class award (2022)
- UoA Top Achiever Scholarship (2022)
- NCEA Scholarship in Calculus, Statistics (2022)
- UoA [NZ Engineering Science Competition](#) – Runners up, \$2000 prize (2021)

🔧 Technical skills

- **Linux:** Linux has been my primary OS since 2016, so I'm highly experienced in writing **shell scripts** and interfacing with the **Linux ecosystem**, **GCC/Clang**, **CMake**, and other tools.
- **Embedded:** I have made projects with **Arduino**, **NodeMCU** (ESP8266), **Raspberry Pi**, **RP2040**, and **MSP430**, using SPI/I²C/UART protocols. I also have experience designing **PCBs** in KiCAD.

🧪 Personal projects (source code available on request)

- [SparkMemes](#): An automated YouTube channel with over 4000 entertaining videos generated without human interaction. (**Python**, **REST APIs**, **Tkinter**)
- **Bad Apple!! video playback on CASIO FX9860GII**: A custom video codec, with a **Python** encoder and a **C** decoder. The video is 20x smaller when compressed, and fits on the calculator.
- **FFToMIDI**: A **Python/numpy** project that converts audio into Piano notes using the **Fast Fourier Transform**. You can still understand human speech encoded through thousands of Piano notes!
- **Space visualisation**: A program in **Rust** to accurately visualise the Earth-Moon system, rendering with **OpenGL** and generating ephemerides with NASA's SPICE toolkit.
- **GameBoy VHDL recreation**: An **FPGA** project to recreate the Nintendo GameBoy in **VHDL**, including Z80-based **CPU design**, and an SDRAM-backed PPU, for the **DEO-CV** board.
- **Other**: I've written emulators, physics simulations, scrapers, websites, Pi-crunchers, raymarchers, and more. I'd love to discuss any of my projects in more detail!

❤️ Interests

- **Hiking and Kayaking**: I love wandering through NZ's beautiful outdoors, and the sense of freedom it brings. I'm looking forward to my next "NZ Great Walks" track.
- **Open Source**: I make a point of using and contributing to open-source projects, and I owe my passion for tinkering to Linux and the open-source community.
- **Photography**: I got serious about photography last year, to enjoy late-night city commutes. I love capturing the asymmetry between nature and technology.

👤 References

References are available on request.