

Oliver Balfour

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📍 OliverBalfour

Experience

- 7-9/2023 **Jane Street**, *Software Engineer Intern (London)*.
Built a distributed machine learning training pipeline. Improved a risk management system.
- 12/2022–
2/2023 **Jane Street**, *Software Engineer Intern (Hong Kong)*.
Improved a **Rust** library for writing **Python** modules using **OCaml** code. Built a debugging tool for a financial event processing pipeline.
- 10–12/2022 **Redwood Research**, *Machine Learning Researcher (remote contract)*.
Worked on a **tensor network compiler** with **Rust** and **PyTorch** and a **visualization tool** for LLM interpretability research. Contributed to research on LLM **multi-component learning**.
- 8/2022 **Redwood Research**, *Machine Learning Alignment Bootcamp (attendee)*.
Built transformer language models (BERT, GPT-2), computer vision models (ResNet) and RL algorithms (DQN, PPO) from the ground up.
- 1/2020–
10/2022 **Liquid Instruments**, *Software Developer (previously Test Engineering Intern)*.
 - Worked on a Windows & Mac app for controlling scientific instruments in **C++** and **Qt**.
 - Built a declarative UI framework, a data export dialog, etc.
 - Wrote a native scientific graphing library with **C++** and **Vulkan**.
 - Developed an automated UI testing framework for an iPad app in **Swift**.
- 2021 **ANU Computer Science Students' Association**, *Vice-President*.
 - Organised events such as a hackathon, careers fair, and games nights with 100+ attendees.
 - Launched and helped build the **ANU Unofficial Timetable React** app.

Projects

- 2021–2022 **ANU Rocketry Control Panel**. Built an end-to-end system for remotely controlling our liquid rocket engine testing platform with a team of 5.
- 2021 **Lambda Consulting**. Built a cross-platform loyalty app for a local business with **Flutter**.
- 2021 **Case Law Search Engine**. Oversaw development of a language-model based search engine.
- 2021 **Verified Profunctor Optics**. Formally verified **Idris** profunctor lenses and prisms.
- 2020 **Calculator**. **Haskell** parser combinator calculator supporting automatic differentiation.
- 2020 **Mirror App**. Kanban board and notes **React** app with cross-device synchronisation.
- 2019 **Diabetic Retinopathy Diagnosis with Computer Vision**.
 - Used deep learning for eye disease diagnosis, achieving 94% specificity.
 - 3rd in Engineering in the Australian **BHP Foundation Science Awards**.

Education

- 2021–2024 **Bachelor of Science**, *Australian National University*.
 - Studying **Mathematics** and **Computer Science**.
 - ANU All-Rounder Scholarship recipient.
 - Offered the Open Philanthropy Undergraduate Scholarship to study abroad.
- 2019–2020 **Canberra College**, *dux (valedictorian), 99.75 percentile rank*.