

# Tom Barthelmeh

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Driven software engineer with full-stack experience, and a passion for solving complex problems at scale.

## Education

**University of Canterbury** – Bachelor of Software Engineering with First Class Honours November 2024

## Experience

**Full-stack Software Engineer**, Couchdrop – Christchurch, NZ November 2024 – Present

- Designed and implemented a custom query language and parser powering a “smart search” feature making it significantly easier for users to query and analyze audit logs from a Postgres table of 3B+ records.
- Rewrote critical queries and indexes to work around large-scale database constraints, ensuring reliable and timely access to log data.
- Built a secure Python microservice implementing the AS2 protocol for EDI message exchange, enabling seamless routing of files to cloud providers through Couchdrop’s virtual file system.
- Developed interactive onboarding workflows covering 15+ common use cases, improving new user activation and reducing support overhead.

**Tutor**, University of Canterbury – Christchurch, NZ Jan 2024 – November 2024

- Led biweekly labs for Web Computing Architecture, guiding students in building RESTful APIs with ExpressJS and front-ends with React + TypeScript.
- Mentored student teams in Agile Scrum practices, SDLC phases, and version control workflows, helping them overcome technical and collaboration challenges in a Java based course.
- Provided one-on-one technical and conceptual support, reinforcing best practices in full stack development and team-based software engineering.

**Software Engineer Intern**, Cavotec – Christchurch, NZ November 2022 – February 2024

- Developed an Automated Factory Acceptance Testing web application using Django and JavaScript, streamlining hands-on operator workflows and reducing manual testing time.
- Trained and deployed custom machine learning models achieving 90%+ accuracy in detecting hull obstructions, reducing operator cost in manual identification.
- Migrated an internal web application to a React frontend with PHP backend, improving maintainability.

## Projects

**Saffron** HackSecret 4 Competition Results

- Prize winner at HackSecret 4.
- A peer-to-peer trading platform that acts as an escrow service, locking tokens into a contract until each side has provided the agreed upon assets for the trade.
- Built using Rust and React.

**Biophilia Visualiser** [github.com/barthelmeh/biophilia\\_visualiser](https://github.com/barthelmeh/biophilia_visualiser)

- A mobile application built with React Native to allow Scion to display a participants stress levels with 3D graphics using ThreeJS.
- Built a backend using ExpressJS with a MicrosoftSQL Azure database to store user information.

## Slack Review Bot

- Noticed issues within our team’s time-to-review so I created a bot that integrates with Slack to randomly generate reviewers and tag them. Internal testing showed that it drastically improved our time-to-review.

## Skills

**Languages:** Python, JavaScript/TypeScript, Rust, Java, SQL

**Frameworks & Libraries:** React, React Native, ExpressJS, Flask