

Cohen Allingham

Mechatronics Engineering student. AI automation builder. Christchurch, New Zealand.

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SUMMARY

Third-year Bachelor of Engineering (Honours) student in Mechatronics Engineering at the University of Canterbury, **GPA 8.19, top 10% of cohort**. Working across embedded systems, control, robotics, and practical AI automation. Comfortable turning messy problems into clear, testable systems, from firmware on a microcontroller to an n8n workflow connecting a client's tools.

EDUCATION

University of Canterbury, Bachelor of Engineering with Honours, Mechatronics Engineering 2024 to 2027 (expected)

GPA 8.19, top 10% of engineering cohort. Multiple **A+** grades in Engineering Mathematics, Programming, Engineering Mechanics, Physics, Stress and Strain in Machine Elements, and Discrete Mathematics.

Current 300-level: **ENCE361** Embedded Systems (STM32, real-time C), **ENEL373** Digital Electronics and Devices (VHDL, CMOS), **ENME303** Control Systems (PID, root locus, Bode), **ENMT301** Mechatronics System Design (Simscape, RoboCup robot).

EXPERIENCE

Founder and AI Automation Builder, Cohen AI March 2026 to present. Christchurch, NZ.

- Designing and building practical **AI automation** for small business operations. Current builds: a **real estate appraisal lead generation and speed-to-lead system**, and a **document chase workflow** for an accounting firm to follow up missing client documents.
- Converted a free real estate prototype into an **active paid client engagement** by demonstrating measurable workflow value over manual processes.
- Toolset: **n8n**, Google Workspace, **OpenAI** and **Anthropic Claude APIs**, Notion CRM, Supabase, Vercel, Gmail and Sheets integrations.

Engineering Intern, Davin Industries November 2025 to February 2026. Christchurch, NZ.

- Developed sheet metal component designs in **CAD** using **GD&T** and **Design for Manufacture** principles, then programmed **TRUMPF CNC** machinery for laser cutting and bending to take parts from drawing through to manufactured product.
- Saw first-hand how production scheduling, quality control, and manufacturing constraints feed back into upstream design choices.

Front of House Crew, The Laboratory Brew Pub July 2021 to present. Lincoln, NZ.

- **Five years** of consistent barista, bartender, and service work alongside full-time engineering study, demonstrating reliability, customer communication, and composure under pressure.

PROJECTS

Speed-to-Lead, AI lead routing system for real estate 2026

Stack: n8n, OpenAI, Notion API, Gmail, Tally.

- Earned the **first paid client engagement**, as measured by progression from free demo to an active paid build, by building an **n8n workflow** that qualifies new enquiries in seconds, deduplicates against the **Notion CRM**, and routes urgency-branched follow-ups, with **LLM** use confined to qualification so the rest stays deterministic and auditable.

ScaleMate, AI assisted weight tracking mobile app April 2026

Stack: React Native, Expo, Supabase, TypeScript.

- Shipped a working **iOS and Android** prototype end to end in **around 10 days**, as measured by a deployable **Expo** build handling cases most trackers miss (GLP-1, cycles, thyroid), by directing **Claude Code** under personal product and architecture decisions across **EWMA** trend logic, **RLS-secured Supabase Postgres**, progress photo comparison, and explainable rule-based insights.

Ladder, AI career tool (Entre SaaSathon 2026) May 2026

Stack: Next.js, Supabase, OpenRouter, Gmail API (Google OAuth), Vercel AI SDK.

- Co-built a weekend hackathon product in a **team of 5**, as measured by a complete demo under version control, that ranks live internship and graduate roles against a parsed CV and syncs **Gmail** into a **Kanban tracker**, by scoping AI into **four narrow jobs** (CV parsing, role ranking, email classification, voice-driven interview prep).

STM32 Step Counter, embedded systems project (UC ENCE361) 2025

Stack: Embedded C, STM32 Cortex M0+, SPI, I2C, finite state machine.

- Built a working pedometer on an **STM32C071 NUCLEO** board, as measured by a **five-state UI** with live distance and goal display, by integrating an **LSM6DS3TR-C IMU** over **SPI** and an **SSD1306 OLED** over **I2C**, and writing a custom task scheduler on a three-layer task, driver, and **HAL architecture**.

Line Following Robot, autonomous mechatronics build (UC) 2025

Stack: PCB design, SolidWorks, Arduino, control systems.

- Delivered the **highlight group project of second year**, as measured by course feedback, by designing **five custom IR reflectance sensor PCBs**, modelling and 3D printing the **SolidWorks** chassis, and tuning an embedded AA-battery control loop to stay smooth through tight corners without overshoot.

Elevator PLC, full size elevator control rig (UC) 2025

Stack: PLC, CX-Programmer, ladder logic, structured text, PI control.

- Programmed a full-size elevator rig with safe door and carriage **interlocks** and accurate floor positioning, as measured by reliable rig demonstrations, by owning the **scheduling algorithm** and **state machine architecture** in **CX-Programmer** and tuning **direction-asymmetric PI gains** to handle gravity and friction differences between up and down travel.

TECHNICAL SKILLS

Embedded and Hardware: Embedded C, STM32, Teensy, real-time systems, SPI, I2C, interrupts, debugging, VHDL, MOSFET and CMOS fundamentals, PCB design, SolidWorks CAD, TRUMPF CNC programming.

Control and Modelling: PID and PI tuning, root locus, Routh stability, Bode and frequency response, Simscape multi-domain modelling, dynamics, vibrations.

Software: Python, C, Git, shell and CLI, Markdown, REST APIs.

AI and Automation: n8n, OpenAI API, Anthropic Claude API, **AI agents and agentic workflows**, **Model Context Protocol (MCP)**, tool use, prompt engineering, workflow mapping, human in the loop systems, Gmail API with **Google OAuth 2.0**, Google Sheets, Notion API integrations, **Retrieval Augmented Generation (RAG)**.

AI-Assisted Prototyping: directing **Claude Code**, **OpenAI Codex**, and similar coding agents in TypeScript, JavaScript, Next.js, React Native (Expo), Supabase, and Vercel to ship working products under personal product and architecture decisions.

Certifications: New Zealand Workplace First Aider (valid through July 2027).