Blake Tolmie

Mobile: 0224761402
Email: blaketolmie8@gmail.com
LinkedIn: https://www.linkedin.com/in/blake-tolmie-b66a96318

Before starting my degree, I explored a variety of industries, including floor sanding, roofing, boat building, beekeeping, and forklift driving. These hands-on experiences gave me a broader perspective on how people live, work, and solve problems. My travel experiences across the world to the countries like U.S., Mexico, China, and Australia has further sharpened my ability to collaborate with people from all walks of life, think on my feet and approach challenges creatively. What drives me isn't just the challenge of making things work, but the responsibility of making things that matter. I want to design tools and technologies that empower others - "things that make things" - while also being mindful of the people and environments they affect. I'm currently studying Mechatronics Engineering, where I've learned to design, build, and integrate systems across mechanics, electronics, and embedded software through various projects. These projects include writing real-time C firmware for STM32 microcontrollers, designing and simulating PCBs, integrating sensors and displays via I^2C and SPI, and implementing control algorithms for dynamic systems. I've also developed CAD models in SolidWorks and Fusion 360, worked with 3D printing and CAM workflows, and gained hands-on skills in debugging, version control (Git), and system-level design. These experiences have given me practical skills in system-level thinking, debugging with oscilloscopes and logic analyzers, version control with Git, and cross-disciplinary collaboration in complex mechatronic projects.

Education

University of Canterbury, Bachelor of Mechatronics Engineering Honours **2023 – Present**

- Please refer to the attachment of my current transcript for a record of the courses I have completed and my strong performance in them. Projects can be seen in the projects section of the CV.

Employment History

Summer Research Intern – Auckland Bioengineering Institute (ABI) **2024 – 2025**

This internship gave me hands-on experience in soft robotics and magnetic actuation. I was part of a research project where I designed a soft valve that controls liquid metal flow in a soft robotic system powered by an MHD pump. Key responsibilities included: change to continuous tense

- Integrating Electropermanent Magnets (EPMs) to allow state switching without continuous power.
- Used magnetic circuit modeling and simulation to improve actuation force and energy efficiency.
- Building and testing Python-based simulations to explore different magnet setups.
- Strengthening my understanding of actuation systems, soft robotics, and bioengineering principles through extensive research and literature review.
- Leading the research project under the guidance of my supervisor and his PhD student, whose mentorship helped strengthen my understanding of literature review, soft robotics, and magnetic actuation.

University of Canterbury **2023 - Present**

Through working for University of Canterbury, I've developed strong communication, leadership, and community-building skills. Mentoring second-year students taught me how to explain complex ideas clearly and adapt to different learning styles. As a UniBuddy ambassador and campus tour guide, I honed my writing, public speaking, and cultural awareness. Organizing events for UC Flight and Bike Clubs strengthened my coordination, planning, and group communication abilities, while helping me create inclusive, engaging environments. List of jobs can be seen below:

- Mechatronics mentor for 2nd-year Mechatronics Engineering students. Developed teaching and communication skills through weekly study sessions and tailored approaches to academic support, course engagement, and building a sense of community. This included running collaborative study groups, coordinating content reviews with tutors, and adjusting sessions to meet students' evolving needs.
- Mechatronics Engineering department ambassador for the UniBuddy project, honing writing and communication skills by crafting informative messages for prospective students.
- Campus tour guide, leading tours and developing presentation, public speaking, and cultural awareness skills to showcase the university to prospective students and families.
- Secretary of the University of Canterbury Flight Club, managing communications and organizing events such as industry tours, strengthening my coordination and planning skills.
- Road Bike Representative of the University of Canterbury Bike Club, where I organize weekly events, maintain clear group communication, and encourage participation across all ability levels.

Stores & Forklift Operator – Solution Dynamics **10/2022 – 02/2023, 11/2023 – 02/2024**

This role strengthened my skills in logistics by requiring precise coordination of incoming and outgoing stock, often under time pressure to meet shipping schedules. I developed strong attention to detail by managing inventory accuracy and carefully checking stock against order sheets. Working closely with production, dispatch, and admin teams helped build my teamwork and communication skills, as we constantly had to adapt plans to meet daily operational needs.

- Operating counterbalance and reach forklifts (F endorsement) to load, unload, and transport stock safely and efficiently.
- Performing daily forklift safety and maintenance checks.
- Managing inventory and ensuring accurate stock records.
- Picking and packing orders to meet operational deadlines.
- Collaborating with other departments to streamline warehouse processes and improve efficiency.
- Tackling layout, storage, and handling challenges for large-scale printing materials—for example jumbo rolls used in continuous-feed commercial printers—through creative problem-solving.

Boat Builder – Lancer Industries (SEALEGS) **04/2022 – 10/2022**

In this role, I specialized in the construction of Hypalon tubes for Lancer Industries (Sealegs) amphibious boats, developing strong hands-on experience in boat manufacturing processes. This role helped me to develop a high attention to detail, precision in craftsmanship, and ability to work effectively in a hands-on, fast-paced production environment. Key responsibilities included:

- Preparing boats for assembly and final production.
- Operating industrial machinery and tools to support safe and efficient manufacturing.
- Handling hazardous chemicals safely while following strict safety protocols.
- Gluing, sanding, buffing, and cleaning components to ensure high-quality finishes.

Beekeeper & Business Owner – The Bee Brothers & Co **08/2015 – 10/2022**

This role helped me refine my leadership, strategic decision-making, and operational management skills by running a small business from the ground up. I gained hands-on experience in business development and optimizing agricultural performance by trialing different hive management techniques, researching best practices, and learning through both success and failure what worked best. Managing everything from production to customer sales taught me how to solve problems cost-effectively, and balance long-term strategies with day-to-day operations. Key responsibilities included:

- Managing over 40 hives, harvesting and selling honey along with handling all business operations.
- Ensuring high levels of customer satisfaction through excellent service.
- Building strong time management, customer service, and problem-solving skills through everyday business operations.

Projects

Embedded Systems & Control

- Step Counter (STM32) – Programmed a real-time step counting system using STM32 microcontroller and C in STM32CubeIDE. Integrated low-level sensor data processing and user feedback.
- UC Fun Kit Multiplayer Game – Developed an interactive multiplayer game of rock-paper-scissors using IR communication, buttons, and OLED display; coded in C.
- Line Following Robot – Designed and programmed a robot using custom PCB and microcontroller firmware in C. Placed 8th out of 38 teams with a time of 14.9 seconds.
- Elevator Control System – Programmed a PLC to simulate elevator logic using ladder logic with PID control and SCAN algorithm for scheduling.

CAD, CAM & Mechatronic Design

- PCB Pick & Place Machine – Designed custom SolidWorks parts and created G-code for CNC operation of a PCB pick-and-place machine.
- CNC Coaster Project – Created a coaster design in SolidWorks, generated 3-axis CNC toolpaths using HSMWorks for mill manufacturing.
- Model Car (ENMT221 Project) – Designed and refined a 3D model of a functional car using SolidWorks.

Rocketry & Aerospace Projects

- Flight Computer – UC Aerospace Club – Designed, assembled, and programmed a custom PCB flight computer using KiCad and embedded C for telemetry and control.
- Level 1 Rocket (UC Aerospace Club) – Collaborated in a multidisciplinary team to build and launch a fully functional rocket meeting Level 1 certification standards.

Other Projects

- RoboCup (ENMT301): Programmed and built an autonomous robot for a competitive robotics challenge, applying embedded systems, sensor fusion, and design optimization.
- Automated Club Email System: Developed an automated email distribution tool using Google Apps Script to streamline communication with all UC Flight club members.

Scholarships and Awards

- **Ngāpuhi Education Scholarship (2024)**
  The Ngāpuhi Education Scholarship supports students of Ngāpuhi descent who are committed to academic success and aspire to contribute their knowledge and skills to the wellbeing and development of Ngāpuhi whānau, hapū, and iwi.

- **NCEA Biology Scholarship (2018)**
  The NCEA Biology Scholarship is a prestigious award offered annually to New Zealand secondary school students who demonstrate exceptional ability in biology. The scholarship is designed to identify and reward students who show advanced understanding, critical thinking, and the ability to integrate and apply biological concepts to complex situations.

Hobbies

- Flying and building drones.
- Outdoor activities (hiking, running, gym, sauna, cycling).
- Reading books.
- Bluegrass music (banjo and tenor banjo).

References

- Grace Jones, University of Canterbury Recruitment Activities Co-ord
  021 083 51118 gracel.jones@canterbury.ac.nz

- Bryan Ruddy, Senior Lecturer at Auckland Bio-engineering Institute
  09 923 2424 b.ruddy@auckland.ac.nz

- Ben Kunath, UC Flight President
  021 0882 4053 ben@kunath.co.nz

- Hamish Priest, Production Manager at Solution Dynamics
  0272481411 hamishpr@solutiondynamics.com

- Other references can be supplied on request