

Sophia Schulz

Mechatronics Engineering BE(Hons) Graduate

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Experience

Creative Technologist Intern | Ottomata

Oct. 2025 - Present

Montréal, Québec, Canada

- Programming real-time interactive systems in TouchDesigner using live tracking data of ice skaters and responsive graphic assets, to be projection-mapped onto a public ice rink in Montréal. Ensuring interactive elements are intuitive and visually appealing for users, that GPU and CPU usage is optimised for improved performance, and that systems allow for ease of on-site adjustments for successful testing and integration of the project in late 2025.

Mechatronics Engineering Intern | Aethermotics

Nov. 2024 - Mar. 2025

Auckland, New Zealand

- Designed and conducted experimental procedures to characterise cooling performance of wearable tech garment, providing company with invaluable data in a thorough report for furthering garment development. Conducted data collection and analysis using various pressure sensors, Microsoft Excel and Visual Basic for Applications (VBA).
- Designed and built fan control dial, integrating off-the-shelf and custom 3D-printed components to allow intuitive, stepwise switching between fan levels that improve user's thermal comfort. Enabled the development of a look-like, feels-like prototype for user testing and achieved a 47% reduction in hardware volume through part consolidation.

Research Assistant | University of Auckland

Apr. 2024 - Apr. 2025

Centre for Automation and Robotic Engineering Science (CARES) | Auckland, New Zealand

- Designed and built a custom frame and mount to enhance camera stability and adjustability for plant disease detection in greenhouses. Responsibilities included CAD design using Autodesk Inventor and Onshape, sourcing parts, 3D printing, fabricating with aluminium extrusion, and conducting on-site testing.
- Designed subsequent prototype for autonomous camera movement through selection, testing and assembly of electronics and components, including a stepper motor, controller, driver and linear actuator. Developed software in C++ for autonomous operation, and designed and built new 3D printed camera mounts and aluminium frame.

Robotics and Autonomous Systems Research Intern | A*STAR

Dec. 2023 - Feb. 2024

Institute for Infocomm Research (I2R) | Singapore

- Thoroughly analysed timing characteristics and performance of the wireless communication protocol ESP-NOW through conducting independent research and programming ESP32 microcontrollers in C++.
- Created and tested a successful C++ program for wireless bilateral tele-operation of two brushless DC motors using ESP-NOW and CAN communication and improved its performance through reducing timing latencies. Involved debugging of CAN lines and BLDC drivers. Video demonstration of this project: <https://youtu.be/fLuXrNqsmR8>
- Integrated barometric pressure sensor readings and real-time filtering techniques in Robot Operating System (ROS) and investigated their effectiveness for altimeter measurements of a Unitree Go1 legged robot.

Production Engineering Intern | Halter

Jul. 2022 - Feb. 2023

Hardware Team | Auckland, New Zealand

- Validated and implemented waterproof test fixtures in production through pioneering Halter's first-ever Gauge R&R study and conducting ANOVA in R. Devised long-term timeline and detailed documentation of all stages, resulting in adherence to deadlines, replicability of testing processes, and increased confidence in waterproofness of hardware.
- Led the transfer of the entire Bill of Materials (BOM) system to Arena and trained senior engineers on BOM release process through comprehensive documentation, extensively improving efficiency and confidence in BOM accuracy.
- Led cross-functional teams to investigate electronic buzzer reliability issues. Successfully diagnosed buzzer failures in production through design and validation of the first buzzer testing fixture, achieving weekly savings of \$7.5k.

Education

Bachelor of Engineering (Honours) | University of Auckland

Graduated May 2025

- First Class Honours, specialising in Mechatronics Engineering

Volunteering

Video Director | Engineering Revue

Mar. 2024 - Feb. 2025

University of Auckland | Auckland, New Zealand

- Directed and produced multiple video projects while adhering to tight deadlines and managing communications with numerous Revue departments, from actors and writing to costumes, makeup, dance and vocalists.
- Managed team of 6 to execute production of these projects through regular pre- and post-production meetings, writing and distributing call sheets, managing on-set roles and delegating storyboarding and editing tasks.
- Led creative direction of video projects through script writing, storyboarding, filming and editing.

Equity Team Co-Leader | Women in Engineering Network (WEN)

Dec. 2021 - Nov. 2023

University of Auckland | Auckland, New Zealand

- Led team to implement first ever student Allyship Trainings and Equity Forums, raising awareness and sparking discussions about equity concerns and improving inclusivity within the engineering faculty.
- Implemented first ever period products initiative within the faculty building to provide free products to students.
- Organised WEN's first ever Accessible Design & Innovation event, featuring engineers from Aurecon, Movio and NDY, to educate and inspire students on incorporating accessibility considerations in engineering projects.
- Panellist at The Diversity Agenda's 2023 Accord Summit, discussing issues such as women retention in engineering.

Skills

Technical Skills: CAD (Onshape, Autodesk Inventor), C/C++, TouchDesigner, MATLAB, R, Fabrication with Laser Cutting, Soldering, and 3D-Printing (polymer-based FDM & SLS, metal-based SLS), SOP and BOM Writing

Design/Other Skills: Digital Photography and Videography, Adobe Lightroom, Adobe Premiere Pro

Achievements

Blackbird Foundation Protostars Programme | Season 9 Alum

2025

- Recipient of \$1k AUD grant towards **Resonance**, a planned STEAM exhibition based in Auckland, NZ

Part IV Project CROWN Robotics Technology Centre Industry Award

2024

- Awarded for Part IV Project titled "A Modular Robotic mechanism for discrete rock sample collection on Mars," completed at the University of Auckland under the supervision of Dr. Minas Liarokapis.

Sir Colin Maiden Scholar | Dean's Leadership Programme

2023

- Awarded through participation in workshops and networking sessions with industry leaders in New Zealand.

Dean's Honours List

2021, 2022, 2023 & 2024

- Top 5% of Part I Engineering cohort, Part II, Part III & Part IV Mechatronics Engineering cohorts.

Projects

Proximity-Controlled Interactive LED Display featuring vintage slide films, created as part of **Resonance**, a planned STEAM exhibition based in Auckland, NZ (for more, see <https://www.sophia04.com/resonance>).

Modular Robotic Mechanism for Discrete Rock Sampling on Mars: BE(Hons) Final Year Research Project and recipient of the CROWN Industry Award (for more details, see <https://www.sophia04.com/robotic-mars-sampling-mechanism>).

Anthropomorphic prosthetic gripper utilising hybrid manufacturing techniques including silicone casting and 3D-printing, validated with various grasping tests (for more details, see <https://www.sophia04.com/anthropomorphic-prosthetic-gripper>).

STEM Take-Home Kits for students participating in workshops at the IEEE Women in Engineering International Leadership Summit (for more details, see <https://www.sophia04.com/post/ieee-wie-ils-2023-student-stem-kits>).

For more examples of current and past work, please visit <https://www.sophia04.com>.