YOUNGSUNG SONG

PART IV MECHATRONICS ENGINEERING STUDENT
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SUMMARY

Hands-on result oriented final year engineering student with completed 800 work hours in industry. Have experince with electronics design, industrial automation, and product validation experience. Gained industry exposure at Aroa Biosurgery designing, testing and implementing electronics. Currently expanding on industrial automation skills through a Part 4 project integrating CAD/CAPP/CAM into a cloud-based manufacturing system. Known for having strong eagerness to learn, collaboration, critical thinking, and delivering practical, user-friendly solutions

PROFESSIONAL EXPERIENCE

Electrical Systems Engineering Intern **Nov 2024 - Feb 2025**
AROA Biosurgery

- Developed new multi-layer PCB boards for data extraction and programming using **LTspice** and **Altium.** Integrated protection circuitry, dual power capability, and modularity improvements.
- Developed custom mechanical housing for the data extraction PCB using **Solidworks.**
- Developed a test and **validation plan** and created a user guide for non-technical users.
- Other tools/skills used: Jira, BitBucket, Hands on experimentation and validation

Mechatronics Engineer Research Intern **Nov 2023 - Feb 2024**
University of Auckland

- Developed an **IoT sensor network** for early detection of rheumatic heart disease based on literature reviews.
- Created an **R Shiny** dashboard to aid in diagnosing rheumatic fever and breast cancer risks based on PROMs questionnaire results

PROJECTS

Cloud-Based Manufacturing via OPC UA (Part 4 University Project - ONGOING)

- Developing a cloud-based MaaS system to automate manufacturing service requests through OPC UA, CAD/CAM automation, and web integration using **Python**

Autonomous Mobile Robot (University Project)

- Developed a **sensor-fusion** control system integrating IR, ultrasonic, and gyroscope feedback with PI controllers all programmed in **C/C++** on Arduino Mega to control a mecanum-wheel mobile robot, enabling path following and coverage of predefined area.

Analogue to CAN Converter (Personal Project)

- Developed an analogue to CAN converter for the 2023 Formula SAE car using **Altium**, **LTspice** enhancing modularity. Also programmed onboard **STM32** microcontroller in **C** for real time sensor data conversion

Accelerator Pedal Position Sensor (Personal Project)

- Designed and implemented an APPS for the 2023 Formula SAE car using **Altium**, processing pedal position sensor signal input and outputting a boosted signal for the control unit.

EDUCATION

Bachelor of Engineering Honours - Mechatronics
University of Auckland - Finish 2025 GPA: 8.6/9

- Part II Mechanical and Mechatronics Assistence Centre Mentor
- Member of the University of Auckland Formula SAE club 2023 2024

ACHIEVEMENTS

- Deans Honours List 2022, 2023, 2024
- Formula SAE Car Achievement 1st in Engineering Design (2023 Australasia)
- Summer Research Scholarship 2023
- Kiwijam 2024 Experimental Award Winner
- BECA Conceptual Design Competition 3rd place

SKILLS

Altium SolidWorks Autodesk Inventor-(CAD + CAM) Fusion-(CAD + CAM) LTspice C/C++ Python MATLAB Simulink Github Signal Processing Process Automation Control Systems Industrial Automation Critical Thinking Interpersonal Skills Strong Work Ethic Positive Attitude

REFERENCES AVAILABLE ON REQUEST