University of Waterloo

Co-operative Work Terms

Anush Jayanthan

21137967

1B Electrical Engineering, Honours, Co-operative Program

Work Term	Employer	Evaluation
Jan - Apr 2025	Waterloo Experience (WE) Accelerate Program Digital Bootcamp Waterloo Ontario Canada Exploring Scholar - Exploring Scholar Digital Marketing Accelerator	EXCELLENT

Planned Future Work Term(s)

Sep - Dec 2025

May - Aug 2026

Jan - Apr 2027

Jan - Apr 2028

Sep - Dec 2028

Anush Jayanthan
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416-569-2147
July 9, 2025

Kiwi Charge Inc.
44 Gerrard Street East
Toronto, ON M5B 1G3

I am writing to express my interest in the Electrical Engineering Intern position at Kiwi Charge Inc for the Fall 2025 work term. As an Electrical Engineering student at the University of Waterloo with a strong foundation in motor control systems, embedded hardware, and sensor integration, I am excited about the opportunity to contribute to your innovative autonomous systems team.

Through my experience on the WATurbine design team, I worked closely on power electronics and control systems, applying circuit analysis and embedded programming to support electromechanical subsystems. In my personal LiDAR Mapping Project, I developed a 2D scanning platform integrating a Time-of-Flight sensor and stepper motor using Python and microcontroller GPIO control. I also designed and assembled the system's custom enclosure and circuitry, and used oscilloscopes and multimeters extensively for signal testing and debugging. These projects not only strengthened my hands-on skills with lab equipment but also deepened my understanding of motion control and sensor interfacing.

Additionally, I have experience designing and soldering PCBs, working with Altium for layout, and have used Bluetooth and serial communication modules for basic robotic applications. My coursework and lab work have consistently involved embedded system design and real-time data collection, making me well-prepared for the testing, validation, and documentation aspects of the role.

I am enthusiastic about the chance to collaborate with Kiwi Charge's experienced team and gain deeper insight into autonomous navigation and powertrain design. Thank you for considering my application. I welcome the opportunity to further discuss how I can contribute to your projects.

Sincerely,

Anush Jayanthan

Anush Jayanthan

a4jayant@uwaterloo.ca | (416)-569-2147 |www.linkedin.com/in/anush-jayanthan |Portfolio

Skills

Electrical/Programming: C/C++, Python, Java, VScode, Eclipse, MATLAB, Solidworks

Technical Tools: Arduino, STM32, Soldering, AutoCAD, MS Excel, Altium, Teensy 4.0, COMSOL

Education

University of Waterloo *Expected Graduation: April 2029*

Bachelor of Applied Science|Electrical Engineering

Relevant Courses: Electricity & Magnetism, Linear/Digital Circuits & Systems, Classic Mechanics

Experience

UW WATurbine Design Team | *Controls/Power Team Member* *May 2025 - Present*

- Programmed a stepper motor via **Teensy 4.0** to control the clamp in a mini wind turbine's braking
- Assembled the shaft and structural base for the competition wind turbine's foundation
- Integrated capacitors with a rectifier to convert AC to DC and minimize voltage ripple

UW Formula Electric Design Team | *Electrical Team Member* *September 2024 - January 2025*

- Co-designed and reviewed **PCB** schematics for sensor integration and power distribution
- Helped optimize the vehicle's low-voltage system for signal integrity and layout efficiency
- Researched and selected the optimal lithium battery for competitive racing, leading to a P1 finish
- **Soldered** components on PCBs using through-hole and surface-mount techniques.

Wyndance Golf Club | *Kitchen Assistant* *May 2023 - September 2023*

- Strengthened ability to perform well in a **fast-paced environment** through quick thinking skills
- **Built relationships** with coworkers to create a more engaged team environment
- Prioritized and multitasked different duties to reach maximum productivity

Projects

LIDAR Spatial Mapping Device Python, Keil uVision *March 2025*

- Developed a system that captures data from a **Time-of-Flight sensor**
- Used a **stepper moto**r to perform **360° spatial scans** for 3D environmental mapping
- Created **ADC** to **PC visualization**, incorporating signal preconditioning, I2C communication, and real-time data streaming via **Python** to generate a 3D visual of a given space
- Designed mounts to minimize interference; utilized GPIO-controlled LED to indicate operational status

MOSFET-Based XOR Gate |MOSFET *February 2025*

- Designed and implemented a CMOS-based **XOR** gate using a 12-M **MOSFET** architecture
- Used 1:1 transistor sizing for balanced logic performance and minimal propagation delay
- Constructed and tested a physical **logic circuit**, performing functional and static level testing via GPIO pin inputs and **oscilloscope** outputs to verify XOR truth table accuracy and voltage thresholds
- Conducted timing analysis on output waveforms, with an oscilloscope to evaluate rise/fall times

Temperature Controlled Fan | C++, *STM-32* *November 2024*

- Designed and implemented a temperature-controlled fan system using an **STM32** microcontroller and DHT22 sensor to provide **hands-free comfort** for individuals with physical limitations
- Collected real-time ambient temperature data to monitor environmental conditions
- Activated fan within **1.5** seconds to provide fast, consistent cooling for users with limited mobility

Pattern Detection Alarm | Python *December 2023*

- Utilized ultrasonic sensors to measure distances, triggering LED pattern changes at set thresholds to create a detection alarm that enhances spatial awareness and **alerts** users to nearby objects
- Developed efficient, responsive code using **Arduino UI** to minimize latency
- Ensured smooth LED pattern transitions based on real-time sensor data for improved user experience

UNIVERSITY OF WATERLOO
UNOFFICIAL GRADE REPORT

Anush Jayanthan
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Fall 2025

PD	20	Strategies for Career Success	
Term Average:	N/A	Decision:	

Spring 2025

ECE	108	Discrete Math & Logic 1	
ECE	106	Electricity & Magnetism	
GENE	120	First-Year Eng Seminar	
MATH	119	Calculus 2 (Eng)	
ECE	192	Eng Economics & Society Impact	
ECE	140	Linear Circuits	
ECE	102	Information Session	
ECE	124	Digital Circuits & Systems	
Term Average:	N/A	Decision:	

Winter 2025

PD	19	Tactics for Workplace Success	CR
COOP	1	Co-operative Work Term	CR
Term Average:	N/A	Decision:	

Fall 2024

MATH	117	Calculus 1 (Eng)	66
ECE	198	Project Studio	76
ECE	150	Fundamentals of Programming	32
GENE	119	First-Year Engineering Seminar	
ECE	190	Eng Profession & Practice	79
COMMST	192	Eng Comm (COMPE/ELE/MGTE)	84
MATH	115	Linear Algebra (Eng)	78
ECE	105	Classical Mechanics	63
Term Average:	66.75	Decision: Conditional	

Anush Jayanthan

ELECTRICAL ENGINEERING @ THE UNIVERSITY OF WATERLOO

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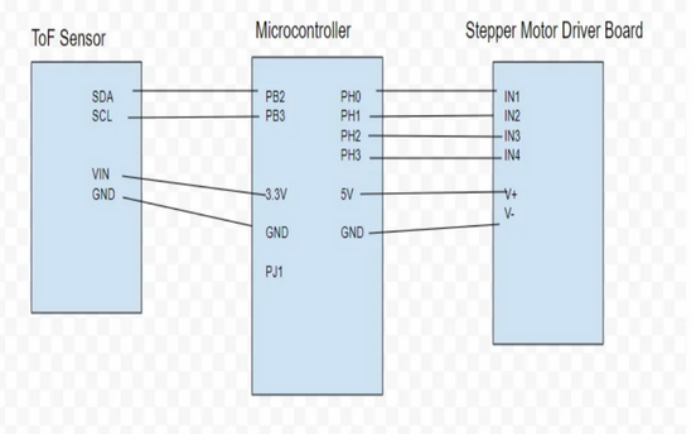
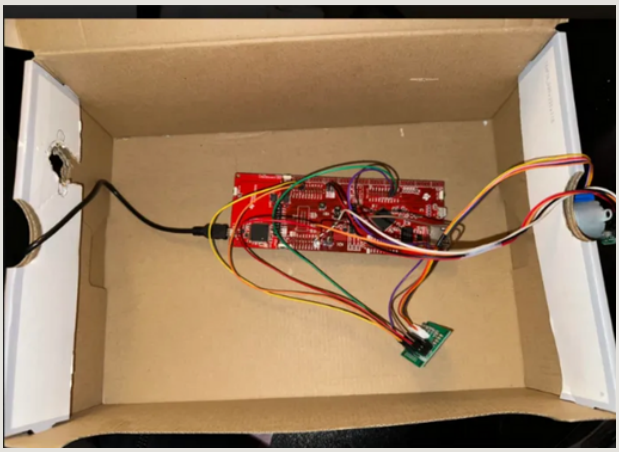
LIDAR SPATIAL MAPPING DEVICE — MARCH 2025





What?

- Developed a spatial mapping device that can **scan** a 3D space and provide a visual layout
- Implemented a full system from **sensor acquisition** to 3D visualization

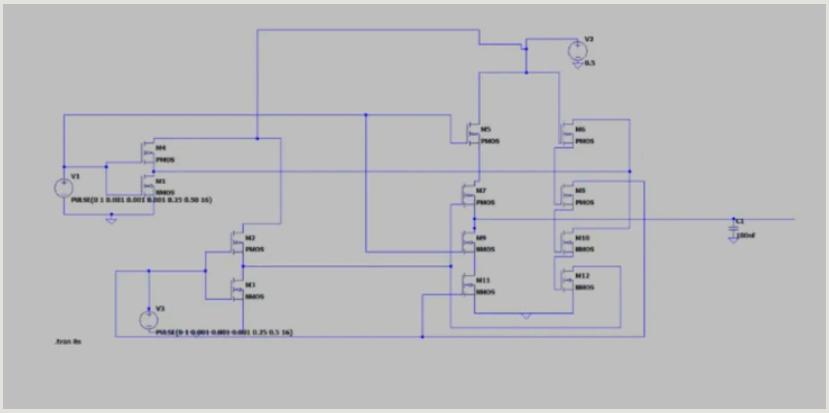
How?

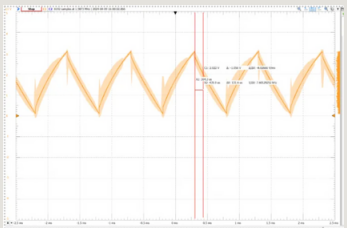
- Integrated the VL53L1X **ToF sensor** with the MSP432E401Y **microcontroller**
- Used **I2C** and **UART** for data transfer,
- Used **C++** for the programming on **Keil uVision**.

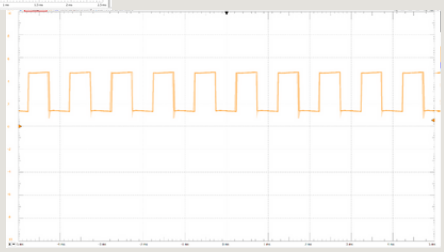
Results

- Enables accurate, **low-cost indoor** spatial awareness for robotics, automation, or navigation systems.

MOSFET-BASED XOR GATE. — FEBRUARY 2025







What?

- Constructed a **digital circuit** designed to perform XOR logic operations in CMOS logic style.

How?

- Used a 1:1 PMOS to NMOS ratio
- Tested using GPIO pins and oscilloscope for accuracy.
- Integrated with a **capacitor** and waveform **generator**
- Built using 12 **MOSFET transistors** (6 PMOS and 6 NMOS)

Results

- Utilizes fundamental digital logic design principles using low-level circuit elements for **prototyping** purposes.
- Provides practical experience with **circuit analysis**, timing optimization, and hardware testing.

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This job is funded by the Government of Canada as advertised in the job posting. To be eligible you must be a Canadian citizen, permanent resident or a protected person defined by the Immigration and Refugee Protection Act. Do you meet this requirement?	Yes
Are you open to an 8 months co-op?	Yes