DARREN LIU

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Education

University of Waterloo   **2024 – 2029**
Bachelor of Applied Science in Electrical Engineering   *Waterloo, ON*

Experience

FRC Team 7902   **Oct 2022 – May 2024**
Programming Lead   *Markham, ON*

- Applied control systems concepts such as PID feedback loop, feedforward, odometry, command groups
- Integrated an RPi vision processing client, involved in signal wiring, crimping connections, networking
- Acted as project manager for a team of 6, managed timeline, contributing **10,000** lines of code
- Held weekly meetings teaching the fundamentals of a subsystem-command/OOP approach to coding
- Achieved finalist award at Centennial event and judges award at Durham event as the robot operator

AliceHacks   **March 2023 – Nov 2023**
Outreach Coordinator   *Markham, ON*

- Engaged over **400** registrants in **30+** different countries with over **90** project submissions
- Reached out to potential sponsors, assisting in acquiring **$1000** in funding
- Worked on logistics, scheduling, prize distribution, workshops, events, judging, and promotional videos

Mathnasium   **Aug 2022 – Aug 2024**
Math Instructor   *Markham, ON*

- Helped students learn new math concepts using Socratic questioning and strategic intervention
- Working on a 4:1 ratio, teaching **60+** students per shift
- Saw a drastic improvement in confidence and achievement in students from a K to grade 12 level

UofT   **Jan 2024 – May 2024**
Pure Math Mentee   *Markham, ON*

- Attend weekly 1:2 sessions learning about topology from a PhD student
- Connecting topology to fields of math such as group theory, abstract algebra, and combinatorics
- Creating a research project & presentation alongside another student regarding the composition of covering maps

Projects

Differential Swerve Drive | *C++, ESP32, Control Systems*   **June 2024**

- Assembled a differential swerve drive module using 3d print
- Wrote firmware on a motor & encoder, creating a PID feedback loop to control its speed and position
- Programmed a control system to allow full control of a wheel in two axes of rotation

Smart Plant Pot | *C++, Arduino*   **October 2023**

- Meant to make owning a plant more engaging, we built a functional flower pot project that tracks its humidity/light levels, using an AI personality to communicate its needs with TTS
- Coordinated the moisture/light sensors with an LCD and LED matrix using *Arduino IDE*

Portfolio Website | *HTML, CSS, JavaScript, Github*   **March 2024**

- Used HTML/CSS/JS to make a website displaying my projects, skills, and experience
- Utilized styling tricks such as scroll animations, fading text, and an image carousel to bring the website to life
- Mention something about domains and github

Personal Trainer Webapp | *HTML, CSS, JavaScript*   **Jan 2023**

- Developed web app that utilized computer vision to count user's workout reps and provide encouragement
- Worked on the frontend, using tricks such as parallax and hover animations to create a simplistic UI

Technical Skills

Languages: Python, Java, C++, HTML/CSS, JavaScript
Technologies: Arduino, ESP32, JFrame, Discord API, RPi, Maya