

SIDDHARTH VISWANATH

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EDUCATION

University of Waterloo

Bachelor of Applied Sciences in Computer Engineering - Freshman

Dean's Honours List (Top 5% standing in a cohort of 300 students)

Relevant Courses: Fundamentals of Programming (C++), Digital Circuits, Linear Circuits

Term Average: 91.58% (4.0 GPA)

September 2022 – April 2027

Waterloo, ON

TECHNICAL SKILLS

Languages: C++, Python, HTML, CSS, JavaScript

Frameworks & Tools: Pandas, NumPy, Matplotlib, Jupyter Notebook, Anaconda, React, Node.js, Bootstrap, Git

Hardware & Design: Arduino, SketchUp, AutoCAD, Fritzing PCB Design, 3D-Printing, Soldering

Communication Protocols: UART, I2C, SPI

PROJECTS

🔗 SumoBot | Python (MicroPython), Microbit, SketchUp, Cura

- Designed and programmed a **fully autonomous**, competitive robot using **Microbit & Python** that pushes other robots out of a 36-inch diameter black ring with a 1-inch white edge.
- Leveraged **ultrasonic & infrared sensors** to locate and eliminate nearby opposing robots with a precision of $\pm 3\text{cm}$.
- Utilized **QTI sensors** on the front of the bot to ensure that it stays within the rink to prevent self-knockout.
- Employed Cura to 3D print a **custom bumper** designed & optimized on **SketchUp**, to effectively overturn incoming robots.

🔗 V8 Roomba | Arduino, C++, Fritzing, TinkerCAD, AutoCAD, Git

- Working in a team of 4 to assemble a fully **autonomous** vacuuming robot with a remote docking station.
- Designed a **4-wheel** omni-drive system incorporating **2 Arduinos** connected via **I2C** to provide adequate PWM pins.
- Devised **test cases** in code files to implement the prototype's **2.4 GHz** radio transceivers and utilize wireless **RF communication** between the robot and its docking station.
- Applied **integration** within code to convert raw **acceleration** data into precise **position** data sets.

🔗 Weather Display | React, Node, JavaScript, bootstrap, HTML, CSS, Git

- Developed and hosted a web app that fetches data from the **OpenWeatherMap** API given a city & country input.
- Enabled a **dark mode** feature and used **conditional mapping** to display backgrounds based on weather output.

🔗 Data Analytics | Python, Jupyter Notebook, Pandas, Matplotlib, NumPy, Scikit-learn

- Applied supervised & unsupervised **ML models** to visualize data frames, make predictions, and measure output accuracy.
- Utilized train-test split from **scikit-learn** and applied simple **decision trees** on large datasets with a **95%** prediction accuracy.
- Leveraged edge detection and **computer vision** to accurately identify road lanes in images with a success rate of **98%**.
- Implemented models trained using **900+** data points, applying techniques such as **linear & logistic regression**.

EXTRACURRICULAR EXPERIENCE

President

Engineering Club, Math Club

September 2021 – June 2022

John Fraser Secondary School

- Conducted workshops** - AI/ML, CAD, Arduino & circuitry throughout the year, resulting in the growth of both clubs by **55%**.
- Organized **weekly meetings** to finalize workshop agendas throughout the year, improving our team's conflict resolution, collaboration, and time management capabilities.
- Prepared & delivered weekly lessons to **130+** students and hosted bi-monthly panels to increase student engagement.
- Planned a **district-wide** robotics competition, collaborating with various supervisors across the school board, to invite **15+** schools, accommodating for **100+** students - however, this event was unfortunately canceled due to COVID.

Founder & Head Scholar

Senior Scholars

September 2021 – June 2022

John Fraser Secondary School

- Managed a team of **40+** academic tutors and provided weekly updates to **8-10** supervisors, ensuring successful operation of the school's **peer-tutoring** service throughout the year.
- Mentored & guided **90+** students over the school year, resulting in assessment scores improving by as much as **35%**.
- Tutored **12+** students on a **weekly basis** in subjects including Algebra I/II, Calculus, Chemistry, Physics, Biology, and English to strengthen their understanding of fundamental concepts.