




AAYUSH SONI

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Education

University Of Waterloo

Sept. 2021 – April 2026

Bachelor of Applied Science in **Mechatronics Engineering**

Waterloo, ON

- **Relevant Courses:** Data Structures and Algorithms, Digital Computation, Linear Algebra, Statics, Circuits
- **Cumulative GPA:** 3.70/4

Technical Skills

Languages: Python, Golang, C/C++, HTML/CSS, JavaScript, Typescript

Frameworks: ReactJS, Angular, Node.js, Flask, Django,

Tools: PostgreSQL, MongoDB, Dgraph, Git/GitHub Jenkins, Docker

Experience

Ki3 Photonics Technologies

Sept 2022 – Present

Quantum Software Developer – Internship

Montreal, Quebec

- Developing an **inverse design** platform for discrete variable photonic circuits using **directed acyclic graphs** and density matrices. Efficiently finding high-performance quantum circuits by comparing with the state-of-the-art methods.
- Implemented the **Li Et Al search algorithm** to produce most optimal quantum circuit, increasing accuracy by **78%**.
- Created a **GitHub Action Workflow** to update the code coverage banner on our Readme, using **genbadge package**.
- Performed **test-driven development** using **A/B** testing to validate quantum circuits, ensuring **81.2%** code coverage.

Accipiter Radar Technologies

Jan 2022 – April 2022

Software Developer – Internship

Niagara, Ontario

- Created a backend **HTTP server** in **Golang** to POST **10K+** requests daily, fetched data from **Dgraph** using DQL and connected Angular's **HTTP client** to display critical data (using Material UI) requested by **12+ clients**.
- Developed an executable python script using the **PYPDF2** library to encrypt paystubs with **password protection**, which saved the Accounting Department **75+ minutes** bi-weekly and increased productivity by **10%**.
- Led the development of creating a new testing framework using **Pytest** and **Selenium** to validate **100+** features of our web application, which is automated by a custom **Jenkins** Multi-branch **continuous integration** pipeline.
- Worked in an **Agile environment** to decrease app failures by **35%** by fixing **20+** using **Typescript** and **Angular**.

Waterloo Rocketry Team

Jan 2022 – March 2022

Backend Software Developer – Design Team

Waterloo, Ontario

- Worked on a Slackbot to handle team meetings, commands, and remainders using **Node.js**, **Express**, and **AWS**.
- Designed our Slackbot to use **AWS Lambda Functions** to listen to **HTTP requests** made by Slack and other APIs to create custom responses, and utilized **GitHub Actions Workflow** for automatic deployment to an AWS server.

Projects

Expense Tracker | Node.js, Express, Postman, MongoDB, React

- Created a **CRUD** app to keep track of expenses by calculating the difference between entered income and expenses
- Utilized **MongoDB** to keep track expenses and tested API Endpoints through **Postman** by sending POST requests
- Designed UI using React/JavaScript, implemented **React Hooks** to make code **37%** more efficient and used **Express API** to connect backend and monitor the transactions made by a user

Personal Blog | Python, Flask, Bootstrap, PostgreSQL, Heroku

- Developed a **CRUD** blogging app with **65+ users** which allows them to gain insight on technological advancements
- Created back-end with **Flask** and used **POST** requests to send information from the login form to the **server**
- Utilized the **PostgreSQL database** to store user information, blog posts, comments and hosted blog on Heroku

Talk-a-Tive | Nextjs, Firebase, Vercel

- Develop a **real-time chat** application with **45+ users** which allows them to chat simultaneously with low latency
- Integrated **React Firebase Hooks** to perform authentication via Google OAuth and store information and deployed on Vercel

Tic Tac Toe | C/C++, Ev3 Robot

- Built a physical Robot using the **EV3 Mindstorm & Lego** to have the Robot play Tic Tac Toe against a player
- Implemented **object-oriented programming** practices to create a **minmax** algorithm to ensure the player never wins
- Created a rotate function to make Robots 90° turn smooth to increase **accuracy by 58%** and reduce errors by **76%**