

# VIVEK BHARDWAJ

COMPUTER SCIENCE AND BUSINESS ADMINISTRATION DOUBLE DEGREE STUDENT

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## Education

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### University of Waterloo

Bachelor of Computer Science

September 2021 – May 2026

Waterloo, Ontario

### Wilfrid Laurier University

Bachelor of Business Administration

September 2021 – May 2026

Waterloo, Ontario

## Technical Skills

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**Languages:** Python, C/C++, C#, Haskell, JavaScript, Swift, HTML/CSS

**Tools/Frameworks/Libraries:** AWS, Git, TensorFlow.js, React, Angular, Node.js, React Native, MongoDB, MySQL

## Experience

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### MIT Driverless [🔗](#)

Business Operations Member

January 2022 – Present

Cambridge, Massachusetts

- Working on advanced computer vision algorithms and high-speed autonomous cars for the Indy Autonomous Challenge

### Waterloo Aerial Robotics Group (WARG)

Computer Vision Developer

December 2021 – Present

Waterloo, Ontario

- Implementing **YOLOv5** object detection neural network for fast mapping of obstacles encountered during free flight
- Processing HD videos to train geolocation module, render frames, and map targets using **PyTorch** for path-planning

### Pangea.app

Freelance Software Engineer

August 2021 – December 2021

Toronto, Ontario

- Used the **MERN** stack to build multi-purpose web applications for clients around the world; impacting users across **25+** countries and increasing revenue **15% QoQ** for 12 small businesses by mapping software solutions to business needs

### Royal Bank of Canada (RBC)

Software Development Intern

July 2021 – August 2021

Toronto, Ontario

- Built internal tooling for RBC to enhance corporate wide event experience for over **90,000** employees globally
- Used **Node.js** to create **REST API** endpoints while improving backend integration with **MySQL** for scalability
- Collaborated in an agile environment to migrate code base from Angular JS to **Angular**; increasing efficiency by **500%**
- Conducted consumer research to collect key user preferences while following a set of structured UI/UX design standards

## Technical Projects

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### Food/Image Recognition | *React, Mobilenet, TensorFlow.js* [🔗](#) [🔗](#)

- Developed an image recognition application that determines whether a food is an appetizer, main course, or dessert
- Used the **MobileNet** model to conduct image label identification and achieved **~97%** accuracy on average
- Leveraged the **Edamam Food API** to collect calorie density data and determine its stage in a full-course meal
- Displayed required information on a **React** web application and implemented JPEG image parsing for optimal results

### CleanIT Waste Management Tool | *Angular, Python, Keras, Matplotlib* [🔗](#) [DEV](#)

- Created a waste management application that uses image recognition to determine where waste should be disposed
- Built using **Angular** and a trained Machine Learning model to identify waste and aggregate data in a **Flask** framework

### Battlesnake | *Python, Flask, Heroku* [🔗](#) [🔗](#)

- Implemented a recursive algorithm that leverages the **Battlesnake API** to autonomously move a snake in a 11x11 grid
- Placed **Top 25** within the Global Arena after competing against 500+ snakes around the world
- Improved algorithm efficiency by calculating shortest distance to food using **A\*** and **Depth-first search** algorithms
- Deployed application on **Heroku** to significantly reduce program latency by **77%** from 335ms to 77ms per move

## Achievements

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Canadian Senior Mathematics Competition (81/9928) & Euclid (502/20597) - Honor Roll & Distinction

Canadian Computing Competition (Data Structures and Algorithms) - Distinction (176/2920)

BU111 Live Case Competition - First Place (1/2000)

University of Waterloo President's Scholarship of Distinction and Terry Garbutt Memorial Award