

# AMMAR VORA

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## SKILLS

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**Languages:** Python, C/C++, Java, JavaScript, HTML/CSS, Assembly, Verilog HDL

**Frameworks & Libraries:** PyTorch, OpenCV, NumPy, ROS/ROS2, Node.js, React.js, Express.js, JavaFX

**Tools:** Git, Linux, MongoDB, Google Firestore, Firebase, Google Cloud Platform, Postman

## EDUCATION

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### University of Toronto

*Expected April 2026*

Bachelor's of Applied Science and Engineering – Computer Engineering

Cumulative GPA: 3.81/4.0 (Honors Student, Dean's List)

Relevant Coursework: Programming Fundamentals in C++, Digital Systems, Software Communication and Design

## EXPERIENCE

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### Medical Computer Vision and Robotics Lab (University of Toronto)

*May 2023 – Present*

*Undergraduate Researcher*

- Developing an image processing pipeline to generate 3D reconstructions of the Larynx, enabling quantification of a rare disease
- Fine-tuned hyperparameters while training a trachea detection model, resulting in 94% testing accuracy

### aUToronto, Self-Driving Car Team (GM-SAE Autodrive Challenge II)

*Sept 2022 – Present*

*Member of Lane Detection team*

- Used Agile development to plan, develop, and test a lane detection pipeline, while handling physical constraints
- Built a lane segment clustering algorithm using OpenCV, resulting in **robust**, real-time lane classification (**30 fps**)
- Leveraged internal APIs to build a ROS2 node in C++ to report nearby lane lines to the competition scoring system
- Developed rigorous test cases to validate the lane detection pipeline and present results at 4 internal milestones

### Autonomous Rover Team (Intelligent Ground Vehicles Competition)

*Sept 2021 – Present*

*Lead of Computer Vision team*

- Developed the object detection pipeline for a rover that can autonomously navigate an obstacle course
- Optimized an algorithm to project 2D object detections into 3D in C++, resulting in a **3x** performance improvement
- Optimized architecture of U-Net model, resulting in faster inference speed with similar accuracy (**5 fps to 60 fps**)
- Designed an automatic pothole data generation pipeline in Python, **saving over 50 hours** in manual data labeling
- Implemented testing-based development and encouraged code reviews, boosting member involvement by **150%**

### The University of Toronto Entrepreneurship Hatchery

*May 2022 – Aug 2022*

*Co-Founder and CTO at FaverIT*

- Developed a real-time chat feature in a React Native application and connected it to a NoSQL Firestore database
- Designed and implemented a microservices-based backend architecture using Node.js to ensure scalability
- Integrated JSON Web Tokens alongside a Google OAuth login system to allow users to securely access REST APIs

## PROJECTS

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### City Explorer – Software Communication and Design

*Jan 2023 – Apr 2023*

- Designed ultra-fast object-oriented APIs and algorithms in C++ that visualize the OpenStreetMap data (**>200 fps**)
- Achieved a path routing time of **<10ms** by implementing Dijkstra's path finding algorithm in C++
- Multi-threaded a Genetic Algorithm to get **4x** as many solutions for the traveling salesman problem in 1 minute

### Rescue Ranger – UofTHacks X (Awarded 1st Place)

*Jan 2023*

- Engineered an autonomous rover and a **full-stack** web application to help with Search and Rescue missions

### Ride Safe – New Hacks (Awarded best use of Google Cloud Platform)

*Nov 2022*

- Used React.js and Google Maps API to build a Progressive Web Application that alerts drivers about nearby bikers