# Waleed **Ahmed**

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## Skills

**Languages:** C++, C, Python, JavaScript, Java, Rust, C#, HTML, CSS, SQL, QML, Assembly
**Libraries & Frameworks:** ROS, OpenCV, Qt, Node, React, Express, Flask, Google Test, Thrift, Hadoop, Kafka
**Tools & Technologies:** Git, Linux, QNX, Perforce, SVN, MongoDB, Jenkins, Docker, LaTeX, Jira

## Experience

**Zoox** *Foster City, CA*
Software Engineering Intern *Sep 2021 – Dec 2021*
- Developed software features for an integration testing framework capable of running driving software on representative hardware
- Designed and developed an improved sensor playback system that enabled more efficient and accurate playback during integration tests

**Huawei** *Toronto, ON*
Autonomous Vehicles Software Engineering Intern *Sep 2020 – Dec 2020*
- Developed a unit test suite for a Frenét frame motion planning stack with **90%** code coverage using **Google Test**
- Designed and implemented a path-building library using **C++** to construct a variety of reference paths to test planning algorithms on
- Used **C++** and **Matplotlib** to extract insights from vehicle trajectory data that helped expose flaws in motion planning algorithms

**Qualcomm** *Toronto, ON*
Automotive ADAS Software Engineering Intern *Jan 2020 – Apr 2020*
- Developed system and application software for an ADAS and autonomous driving platform in **C/C++**
- Accelerated performance of a **computer vision SDK** by an average of **20x** by leveraging available hardware and software architecture in automotive focused Snapdragon SoCs

**Christie Digital** *Kitchener, ON*
Software Engineering Intern *May 2019 – Aug 2019*
- Worked closely with QA and UI/UX designers for user interface development and maintenance to meet release deadlines across a wide variety of platforms using the **Qt** framework in **C++** and **QML**
- Significantly reduced the effort needed to maintain code health through software architecture redesign and setup of a continuous integration pipeline on a **Jenkins** build server that included unit tests with **90%** code coverage using **Google Test**

**Synaptive Medical** *Toronto, ON*
Video Software Engineering Intern *Sep 2018 – Dec 2018*
- Improved visibility of biological tissue during surgical procedures through color manipulation using **C++ (OpenCV)** and **C#**
- Enabled intuitive usage of a color manipulation algorithm through a web interface built with **JavaScript**, **HTML**, and **CSS**
- Post-processed image data in **Python** using **Pandas**, **Numpy**, and **Matplotlib** to analyze color manipulation

## Projects

**Vizia** ⚙ *Capstone Design Project*
- Wearable glasses that can extract and communicate information from an image to a visually impaired user through audio transcription
- Consists of glasses with **Raspberry Pi** for image capture, **Flask** web app for computer vision processing, and an **iOS** app for audio playback

**Autonomous Robot Racing** ⚙ *UW Robotics*
- Managed development for a robot that competed in the **International Autonomous Robot Racing Competition**
- Developed software architecture in **ROS** and **C++** for perception, mapping, and path planning using a stereo camera, IMU, and LiDAR

**Synviz** ⚙ *UofTHacks VII (3rd place)*
- Built an IoT device using a **Raspberry Pi** that could decode spoken text from facial input
- Developed a backend web server in **Python** using **Flask**, **Google Cloud Storage**, **OpenCV**, and **TensorFlow**

## Education

**University of Waterloo**
B.ASc Computer Engineering *Sep 2017 – Apr 2022*
- Relevant Coursework: Distributed Computing, Robot Dynamics & Control, Cooperative & Adaptive Algorithms, Programming for Performance, Autonomous Vehicles, Computer Networks, Database Systems, Operating Systems, Compilers, Systems Programming & Concurrency, Algorithms & Data Structures
- Online Coursework: Web Development Bootcamp, Self-Driving Cars Specialization, Machine Learning, Computer Vision