# Roozbeh Ali

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## Education

**University of Waterloo** B.A.Sc, Honours Computer Engineering — April 2028

**Coursework:** Algorithms & Data Structures, Discrete Mathematics, Digital Circuits & Systems

## Experience

**UW EcoCAR Electric Vehicle Team** — Infrastructure Engineer (Connected Software Team) — Sep 2023 - Present

- Designed Python scripts in specialized RTMaps software, allowing custom TensorFlow models to perform vital vehicle functions such as lane detection, driver attention monitoring, and infrastructure/traffic classification
- Wrote documentation for other CSW team members to easily use integrated vehicle user display and custom Python scripts in RTMaps for further critical autonomous driving tasks

**Beavr Labs** — Software Engineering Intern (Front-end Team) — Jul 2022 - Dec 2022

- Developed REST APIs to interact with back end Prisma database and manipulate user information (e.g. transactions, legal information, banking information)
- Optimized onboarding flows leading to 30% improvement in loading times via elimination of redundant API calls and leveraging React hooks
- Built user views for depositing/withdrawing CAD and BTC including interactive transaction history tables based on Figma designs from UI/UX team deploying custom Chakra UI components and React hooks

**FIRST Robotics Team 6070** — Programming Captain and Competition Driver — Sep 2021 - April 2023

- Engineered 2023 season robot's functionality and movements using Java and WPILib, implementing crucial robot components such as drive-train and arm movements along with 15-second autonomous routines
- Spearheaded robot driving strategy at London and Windsor 2023 season events (e.g. path planning, scoring approach, defense vs. attack) leading team to semi-finals finish and eliminating over 15 other top teams
- Performed 20+ routine robot inspections after matches and led pit crew in performing necessary repairs

## Projects

**Evlav - Plagiarism Detection App** — Hack3 Finalist & Best Education Hack Winner

- Deployed Google's Tesseract OCR Engine to convert handwritten text to digital text, subsequently utilizing PySimilar and PyTorch to obtain a plagiarism percentage score between two digital text pieces
- Implemented a minimal, responsive front-end using Bootstrap and a Django back-end with POST requests to the API's listed above; project won "Best Education Hack" theme and progressed to finalist winners

**Monopoly Markov Chain Modelling** — IB Maths HL IA

- Modelled economics-based board game Monopoly using Markov Chains and matrix operations in Python
- Leveraged NumPy and pandas libraries to implement game board as 2D array and facilitate identity matrices and matrix multiplication to easily manipulate the board
- Simulated hundreds of 1000-step board traversals to locate most visited squares on board using novel designed algorithm and introductory probability theory

## Skills

- **Languages:** Python, C++, Java, JavaScript, TypeScript, HTML5, CSS3, SQL
- **Libraries and Tools:** React, Next.js, pandas, NumPy, Django, Git, Docker