

# DHRUV UPADHYAY

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## TECHNICAL SKILLS

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**Languages:** (*Proficient*) C++, Python, Java (*Familiar*) C, SQL, HTML/CSS

**Tools/Frameworks:** (*Proficient*) Git, Pandas, Numpy, Matplotlib (*Familiar*) OpenCV, Keras, Flask, AWS

## EDUCATION

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University of Waterloo | Waterloo, ON

September 2020 – April 2025

- Degree: Candidate for Bachelor of Applied Science in Mechatronics Engineering (4.0 Term GPA)
- Relevant Coursework: Digital Computation, Data Structures and Algorithms

## RELEVANT EXPERIENCE

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Software Developer Intern | Automatic Visualization | Whitby, ON

June 2020-December 2020

- Worked with a focused group of professionals to develop an MVP for a commercial data visualization dashboard.
- Developed various API connections to platforms such as Twitter and Sale through OAuth 2.0 using Flask
- Designed and implemented database schema using SQL queries, and oversaw platform transition from GCP to AWS.
- Implemented AWS Key Management System to protect and encrypt sensitive client data on the database

Firmware Subteam Member | University of Waterloo Robotics Team | Waterloo, ON

August 2020-Present

- Used C++ and MBED-OS on the ARM STM-32 board to program firmware of the Mars Rover project to be used in competition.
- Implemented interrupt-based CAN system using MBED events to increase firmware efficiency and reduce dropped CAN messages.
- Currently testing system remotely using SocketCAN API with C.

Research Intern | Foundation of Student Science and Technology | Whitby, ON

February 2019-June 2019

- Researched correlation between pancreatic cancer and alcohol consumption using Pandas, Numpy, and Scikit-Learn under supervision of an industry level research mentor, generating various plots using Matplotlib.
- Attained 98% classification accuracy using a statistical model based on the Random Forest algorithm.

## PROJECTS

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COVID-19 Hotspot Detection App (NASA SpaceApps Challenge) | Python, Flask, Flutter

- Developed backend for application that predicted the likelihood of a certain city becoming a COVID-19 hotspot based on a variety of factors by using a Machine Learning algorithm trained with Scikit-Learn.
- Programmed a Flask API to send the result of the ML model to be displayed to the user in the frontend.

Computer-Vision based Sudoku Solver | Python, OpenCV, Tensorflow-Keras

- Used OpenCV operations such as thresholding, warp transform, and Hough lines to extract sudoku board from an image taken at any angle.
- Implemented a neural network model trained using Keras to identify and display digits in a terminal-based UI and computed the solved board using a recursive backtracking algorithm written in Python.

## VOLUNTEERING AND EXTRACURRICULARS

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Captain and Lead Programmer | Anderson Skills Robotics Team | Whitby, ON

September 2019-April 2020

- Founded a school Skills Robotics Team, coordinating electronics, manufacturing, and programming of two competition robots.
- Used C++ to implement a PID algorithm for the autonomous portions of the competition, while mentoring juniors about embedded systems.

Warrant Officer Second Class | 2Vandenbos Royal Canadian Air Cadet Squadron | Whitby, ON

December 2014-June 2020

- Lead team of four in a squadron of over 200 cadets to achieve training compliance and coordinated transition to paperless system.
- Selected from among the top cadets in Canada to attend the glider pilot scholarship, attaining flight training and pilot's license.
- Instructed cadets in aeronautics and flight mechanics and represented wing of over 400 cadets at the provincial effective speaking competition.

## HONOURS AND RECOGNITION

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Schulich Leader | Schulich Leader Foundation

June 2020

- Recipient of the [Schulich Leader Scholarship](#), Canada's most coveted undergraduate scholarship for STEM, granted to 100 students and one of five at Waterloo Engineering from candidates across Canada for academic excellence, entrepreneurial spirit, and leadership.

Top Course Cadet in Flight | Glider Pilot Scholarship Course, Air Cadet League of Canada

August 2019

- Awarded bursary for further aeronautical training based on strong piloting and leadership skills and exceptional understanding of aviation, flight mechanics and aircraft maintenance.