

Daniel Ye

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EDUCATION

University of Waterloo – Ontario, Canada

09/2020 – 04/2025 (Expected)

- Candidate for BAsC in Mechatronics Engineering (Cumulative Average: 96.3%, 4.0 GPA, Dean's List Recipient)
- Courses: Algorithms and Data Structures, Microprocessors and Digital Logic, Accelerated Computing with CUDA C/C++

SKILLS

Languages/Frameworks: C++, C, Python, Java, CUDA, ROS, VHDL, PLC, Docker, HTML, CSS

Applications: Arduino, Git, Android Studio, AutoCAD, SolidWorks

EXPERIENCE

System Software Intern DriveIX – Nvidia

01/2022 – 04/2022

- Implemented **Temporal Noise Reduction** (TNR) algorithm in C++ onto stitched camera output to improve vehicle safety
- Developed feature to generate fixed virtual camera paths in **OpenGL** to provide repeatable scenarios for validating TNR
- Unified **CUDA** streams and kernel invocations for camera stitcher to optimize GPU usage and improve latency by **15%**
- Resolved **AUTOSAR** Coverity violations, created **OpenCV** image compare tool, and **Python** script to reserve VMs

Test Automation Intern – Ford Motor Company

05/2021 – 08/2021

- Automated and configured **10+ test cases** for the Advanced Driver-Assistance System (ADAS) with **Python** using **Slash**
- Diagnosed automotive ECU issues by performing **50+ embedded software tests** in a **Linux** environment
- Validated internal CAN messages by simulating an MQTT-Broker using a publish-subscribe network protocol

Radar Team Lead – WATonomous (Autonomous Vehicle Design Team)

05/2021 – Present

- Led a team of 5 to research and implement **DBSCAN clustering algorithm** for radar object detections using **ROS**
- Integrated DBSCAN algorithm and bounding box generation into ROS node to visualize clusters in real-time
- Developed a **CARLA simulation** environment to simulate radar point cloud detections in real-time

Firmware Developer – University of Waterloo Midnight Sun Solar Car Team

09/2020 – 08/2021

- Developed **CAN** based GPIO control framework in **C**, to facilitate easier controller board firmware changes
- Wrote **Python** scripts to trigger I2C readings and concatenate multiple CAN messages for variable data lengths
- Validated the functionalities of the modules by creating comprehensive test suites with **15+ unit tests**

Lead Programmer – FIRST Robotics Competition Team 4015

09/2018 – 06/2020

- Implemented real-time **camera vision** and **PID control** to align robot's turret with target, **increasing accuracy by 70%**
- Designed active intake system using Solid Edge which increased ball collection efficiency and reduced effort for drivers
- Developed joystick teleoperated controls and autonomous movement, intake, and shooter functionalities based off sensory feedback using **Java**, that improved maneuverability and **decreased cycle times by 50%**

PROJECTS

Gesture-Recognition Glove 🧤 – Python, TensorFlow, Arduino, C/C++ (MakeUofT 2021 Winner)

03/2021

- Designed a smart glove using an Inertial Measurement Unit (IMU) and flex sensor data to track hand position and recognize gestures in real-time using a TensorFlow **machine learning model** with **92% accuracy**
- Processed time-series sensor data from hand gestures to create training datasets and validate the model

Self-Balancing Robot 🤖 – Arduino, MPU6050, C/C++

12/2020 – 01/2021

- Created a two wheel self-balancing Arduino robot using real-time MPU6050 IMU readings to maintain balance
- Tuned **PID control loop** to drive the motors based off accelerometer and gyroscope measurements in **C**

Pipe Dodger Android Game 🎮 – Java, Android Studio

11/2019 – 12/2019

- Designed an interactive and scalable Android game available on the *Google Play Store* with **50+ downloads**
- Implemented storage of local data to keep track of scores and points to purchase in-game cosmetic items