Daniel Ye

University of Waterloo Mechatronics Engineering

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SKILLS

Languages: Java, C/C++, Python, HTML, CSS
Applications: Arduino, Git/GitHub, Android Studio, AutoCAD, SolidWorks

RELEVANT EXPERIENCE

Firmware Developer – *University of Waterloo Midnight Sun Solar Car Team* Sep 2020 – Present

- Developed firmware in C to control GPIO pins and send messages over a Controller Area Network (CAN)
- Wrote Python scripts to trigger I2C readings to facilitate controller board firmware changes
- Validated the functionalities of the modules by writing comprehensive unit tests

Lead Programmer – *FIRST Robotics Competition Team 4015* Sep 2018 – Jun 2020

- Implemented real-time camera vision processing to automatically align the robot with the target using a control loop, which increased its speed and accuracy by 80%, scoring more points
- Designed the intake system which greatly 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%

Club Founder and President – *St. Joseph Secondary School Computer Science Club* Jun 2018 – May 2020

- Taught a group of 20+ students algorithms, data structures, and object-oriented programming in Java
- Prepared and presented lessons, answered homework questions, and organized contests to engage students and improve their performance in the Canadian Computing Competition

PROJECTS

Gesture-Recognition Glove – Python, TensorFlow, Arduino, C/C++ Mar 2021

- Designed a smart glove using IMU and flex sensor data to track hand position and recognize gestures
- Processed time-series sensor data from hand gestures to create training datasets and validate the model
- Performed real-time classification of hand gestures using the model with 92% accuracy

Self-Balancing Robot – Arduino, MPU6050, C/C++ Dec 2020 – Jan 2021

- Built and programmed a two wheel self-balancing robot in C, using real-time readings from a MPU6050 IMU controlled by an Arduino
- Tuned PID control loop to drive the motors based off accelerometer and gyroscope measurements

Pipe Dodger Android Game – Java, Android Studio Nov 2019 – Dec 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

AWARDS

Hack the Hammer Winner (*Face the Police Project*) – Python Feb 2018

- Awarded 2nd place for creating a Python facial recognition program to automatically detect and identify subjects on camera by matching their facial features to locally stored database of images
- Developed motion tracking functionalities and displayed the subject's information on a graphical interface

EDUCATION

University of Waterloo, Waterloo, ON Sep 2020 – Apr 2025 (Expected)

- Candidate for Bachelor of Applied Science in Mechatronics Engineering (Term Average: 96.7%, 4.0 GPA)