Julian Pettit

Phone: (519) 635-9415 Email: julian.s.pettit@gmail.com Website: jpettit.ca

WORK EXPERIENCE

Human-Computer Interaction Software Developer, *AdHawk Microsystems* **Jan. 2019 – Aug. 2019**

- Developed an eye tracking gaze calibration system accurate to 1° using pose estimation of ArUco markers and frame transformations with the OpenCV library in Python.
- Redesigned the core product public API to support command acknowledgement and multiple pipelines to meet key investor requirements. Tested and supported the changes through multiple release cycles.
- Created frontend applications to support visualization of data streams using PyQtGraph in Python.
- Developed a success indication system to improve the ease of use of MEMS testing boards.

Software Engineering Consultant, *IBM* **May 2018 – Aug. 2018**

- Developed computer vision algorithms for 3 types of image feature replacement using the OpenCV library in C++.
- Created an image recognition and tagging application with a trained classifier using TensorFlow and Keras.
- Trained a filter for user-submitted content using over 10000 samples to categorize images into 8 classes.
- Produced an IOT warehouse inventory management application in Java using Bluetooth Low Energy RSSI beacons.

Product Development Engineering Student, *UTEX Scientific Instruments* **Sep. 2017 – Dec. 2017**

- Developed low-level nondestructive testing software on an ARM processor for ultrasonic modules and motion controllers using C. Integrated controls hardware for multi-axial scanning.
- Simulated ultrasonic scans and automated 25% of the nondestructive scanning process with C# and Python scripts.

Test Software Developer, *Virtek Vision International* **Jan. 2017 – Apr. 2017**

- Validated targeting speed improvements to industrial laser projectors by automating test processes using NUnit and increasing overall coverage of integration tests by 150%.

Application Developer, *Innovasium Digital* **May 2016 – Aug. 2016**

- Created customized web applications to improve workflow and communication for finance companies using the React and Redux JavaScript libraries. Tested applications with JUnit.

PROJECT EXPERIENCE

Passenger Detection System, *University of Waterloo Alternative Fuels Team* **Sep. 2019 – Dec. 2019**

- Created and trained a classifier to detect the presence of children and pets in parked vehicles with 95% accuracy using the internal driver drowsiness camera in an SAE level 2 autonomous vehicle for the EcoCAR Mobility Challenge.
- Deployed a YOLO detection algorithm on a Jetson TX2 module using TensorFlow and Keras in Python.
- Developed an alert system to warn the driver of forgotten passengers via SMS upon exiting the vehicle.

EDUCATION

University of Waterloo **Sep. 2015 - Apr. 2020**

BASc Mechatronics Engineering *Waterloo, ON*

- University of Waterloo President's Scholarship
- Kendo Club President; Alternative Fuels Team Member; EngSoc Director; Class Representative

SKILLS & INTERESTS

- **Programming Languages:** Python; C/C++; JavaScript; Bash; SQL
- **Skills:** O.O.P.; Computer Vision; Machine Learning; Algorithms; Data Analytics; Cloud Computing; IOT
- **Interests:** Bicycling; Cooking; Martial Arts; Camping; Literature; Languages (German, French, English)