JACK MACKINNON

University of Waterloo | ID# 20682183 | 2A Mechatronics Engineering
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SKILLS & SUMMARY OF QUALIFICATIONS

C++	MatLab	Git, GitHub, GitLab	Data Analysis	Automation	Leadership
Python	HTML	Physics	Debugging	Computer Vision	Project Management

- Proficient in Python and object-oriented programming language C++
- Automated systems developer
- Prototyping, debugging and testing of robotic systems and software

WORK EXPERIENCE

Teledyne DALSA, Waterloo ON. .... 09/18 – 12/18
Research and Development Engineer

- Outlined a new phase of an infrared sensor automation project with progressive, incremental steps
- Paired Universal Robots' UR3 and a Dino-lite for image acquisition of the sensors
- Used OpenCV's Python computer vision API to locate identifying labels on infrared sensors
- Programmed testing code to optimize parameters in the computer vision software
- Frequently managed the project's code repository using GitBash and GitLab

STAC Performance, New Hamburg ON. .... 01/18 – 04/18
Analytical and Process Engineer

- Prototyped a heart-beat/breath detector in C++ that processes and interprets raw pulse oximeter data
- Integrated a pulse oximeter and an Arduino to acquire data on Linux
- Analyzed energy output of an electrical motor to automate the QA process of the *STAC Zero*
- Researched Google's machine learning software *TensorFlow*

Toyota Motor Manufacturing Canada, Cambridge ON. .... 05/16 – 09/16
Team Member

- Lexus RX350 product quality insurance
- Exercised time management and attention to detail through vehicle inspection

Fundraiser for Pancreatic Cancer, Resurrection C.S.S., Kitchener ON. .... 04/15 – 05/15
Project Lead

- Managed 26 people in the production and execution of a school-wide fundraiser under strict time constraints

DESIGN PROJECTS

UW REACT, University of Waterloo, Waterloo ON. .... 01/19 – Present
Path Planning & Perception Sub-Teams

- Aiding robots in decision making by creating a strategy and reacting to interference in Python
- Computer vision interpretation of the robot's environments with OpenCV and ROS in C++ and Python

WATonomous, University of Waterloo, Waterloo ON. .... 09/17 – 12/18
Sub-Team Lead

- General Motors *AutoDrive Challenge*, hosted by *SAE,* the *Student Association of Engineering*
- Developed a recursive C++ algorithm to map the velocity of an autonomous vehicle along a local path
- Wrote a Python script to extract self-acquired vehicle data from a ROS bag file
- Lead a team of 5 engineers in preparation of the first challenge, held in Yuma, AZ

University of Waterloo, Waterloo ON. .... 10/17 – 12/17
Autonomous Checkers-Playing Robot

- Designed and prototyped an autonomous checkers-playing robot, with 3 associates
- Programmed and optimized robotic movements in C++ for a LEGO® MINDSTORMS® EV3
- Debugged software and hardware issues

EDUCATION

University of Waterloo, Waterloo ON, Candidate for BASc, Honors Mechatronics Engineering ....09/17 – Present
University of Waterloo, Waterloo ON, Candidate for BSc, Honors Physics .... 09/16 – 04/17