# WALEED AHMED

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# SKILLS



# **EXPERIENCE**

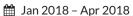
## Video Software Developer

#### **Synaptive Medical**

♥ Toronto, ON

- Reverse engineered third party camera color settings to improve visibility of biological tissue during surgical procedures
- Used **C#** for design and integration of image processing algorithms with existing software architecture in a Windows environment
- Post-processed image data in **Python** using data libraries such as **Pandas**, **Numpy**, and **Matplotlib** to analyze colour manipulation
- Used OpenCV in C++ to model and apply colour transformations
- Created a Windows desktop application using the .NET framework to serve as a front-end interface for a serial communication protocol that allowed reading/writing of camera settings
- Created a web interface using **JavScript**, **HTML**, and **CSS** for convenient and intuitive usage of a colour manipulation algorithm

# Industrial Imaging Software Developer P&P Optica



♥ Waterloo, ON



- Implemented image correction algorithms and post-processing for industrial cameras in **Python** using **Numpy**, **OpenCV**, and **Matplotlib**
- Refactored data handling modules for efficient file input/output and wrote unit tests for them in **Python** using **Pytest**
- Refactored camera control modules in C/C++ that use the Camera Link serial protocol to interface with the camera for control purposes
- Documented software design decisions and a troubleshooting guide to efficiently debug issues pertaining to image acquisition

# **ACTIVITIES**

#### Software Team Lead

#### **UW Robotics**

Apr 2018 - Present

- Leading software planning for a mobile racing robot set to compete in the International Autonomous Robot Racing Competition
- Developed software architecture using a Linux based framework;
   ROS (Robot Operating System), for efficient package management and communication between machine vision modules in C++
- Used CUDA, NVIDEA's parallel computing platform for GPU optimization of OpenCV code in C++ for lane and object detection

# **PROJECTS**

#### Arduino Jukebox

github.com/w29ahmed/Arduino-JukeBox

- Programmed in C++ to use analog input from a variable resistor to cycle through a list of songs displayed on a 16x2 LCD screen
- Songs are hard coded frequency patterns digitally sent to a piezoelectric speaker

## **Toronto Raptors Image Classifier**

github.com/w29ahmed/toronto-raptors-classifier

 Utilized transfer learning on Google's Inception v3 image classifier to identify players on the Toronto Raptors using TensorFlow, an open source machine learning framework in Python

#### Arduino Voltmeter

github.com/w29ahmed/Arduino-Voltmeter

 Programmed in C++ to utilize a voltage divider circuit in order to read voltages up to 500 V (±1.4% error) and display it on a 16x2 LCD screen

## Android Notes App

github.com/w29ahmed/Notes\_App

 Simple but efficient note taking app for Android API levels 15 and above constructed using Java, XML, and a SQLite Database

# **EDUCATION**

B.ASc Computer Engineering University of Waterloo





#### Online Coursework

- Stanford University: Machine Learning with MATLAB by Andrew Ng
- Machine Learning A-Z: Hands-On Python & R In Data Science

# **INTERESTS**

Machine Vision Image Processing

Machine Learning Gym Reading

Basketball Toronto Raptors