WALEED AHMED

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SKILLS

C++ | Python | C# | QML | JavaScript | HTML | CSS | Java

OpenCV | ROS | Qt | .NET | TensorFlow | Google Test

Git | SVN | Agile | Jira | Jenkins | Bash | Linux | Windows

EXPERIENCE

Software Developer

Christie Digital

May 2019 – Present | Kitchener, ON

- Worked closely with QA and UI/UX designers for user interface development and maintenance across a wide variety of platforms using the **Qt** framework in **C++** and **QML**
- Involved with the software development of a high-profile application to be used to control up to 256 projectors at Dubai Expo in 2020
- Refactored the software architecture of a desktop application to be more modular and wrote extensive unit tests using **Google Test** for continuous integration purposes setup on a **Jenkins** build server

Video Software Developer

Synaptive Medical

Sep 2018 – Dec 2018 | 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
- Utilized **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
- Built a web interface using **JavaScript**, **HTML**, and **CSS** for convenient and intuitive usage of a colour manipulation algorithm

Industrial Imaging Software Developer

P&P Optica

Jan 2018 – Apr 2018 | Waterloo, ON

- Developed software for industrial imaging applications on **Linux** machines with **Git** version control in an **Agile** environment
- 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**
- Restructured 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

github.com/uwrobotics/RR2019

- Led the software team for a mobile racing robot and competed 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 software modules in **C++**
- Planned and managed software development for an autonomous robot capable of **perception**, **mapping**, and **path planning** using a front-facing stereo camera along with a lidar sensor
- Implemented a lane detection algorithm using **OpenCV** capable of handling variable lane widths, curvature, and lighting conditions
- Implemented a lightweight traffic light detection algorithm using **OpenCV** that reduced overhead and false positive rate in comparison to the previous method

PROJECTS

Agilite

DeltaHacks V

Jan 2019

github.com/w29ahmed/Agilite

- Built a backend processing pipeline in **Python** using **OpenCV** and **Tensorflow** capable of extracting and recognizing handwritten text from an agile board

EDUCATION

B.ASc Computer Engineering

University of Waterloo

2022

INTERESTS

Autonomous Vehicles | Computer Vision | Image Processing | Deep Learning | Gym | Reading | Basketball | Toronto Raptors