WALEED AHMED

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SKILLS

C++ | Python | C# | QML | C | JavaScript | MATLAB | Java

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

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

EXPERIENCE

Software Developer
Christie Digital

May 2019 – Aug 2019 | Kitchener, ON

- Worked closely with QA and UI/UX designers for user interface development and maintenance to meet release deadlines across a wide variety of platforms using the **Qt** framework in **C++** and **QML**
- Refactored software architecture to be more modular and wrote extensive unit tests using **Google Test** for continuous integration purposes setup on a **Jenkins** build server, significantly reducing the effort needed to maintain code health for developers and QA
- User interface and backend development for a high-profile application that will enable seamless and efficient control of up to 256 projectors to deliver a world-class visual experience at Expo 2020 in Dubai

Video Software Developer
Synaptive Medical

Sep 2018 – Dec 2018 | Toronto, ON

- Reverse engineered third party camera colour 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 desktop application using the **.NET** framework to serve as a frontend interface for a serial communication protocol that allowed reading/writing of camera settings, enabling quicker debugging
- 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

Path Planning Core Member
WATonomous

Sep 2019 – Present

- Contributing to software development for a level 4 autonomous vehicle competing in the **SAE AutoDrive Challenge**

Software Team Lead
UW Robotics

Apr 2018 – Aug 2019

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 in **C++**
- Planned and managed development for an autonomous robot capable of **perception**, **mapping**, and **path planning** using a stereo camera, IMU, and lidar sensor
- Implemented a lane detection algorithm using **OpenCV** capable of handling variable lane widths, curvature, and lighting conditions at a maximum of 25 Hz
- Introduced a new lightweight traffic light detection algorithm using **OpenCV** that reduced overhead and false positive rate

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

Apr 2022

Online Coursework

- Coursera: Machine Learning (Andrew Ng)
- Udemy: Machine Learning A-Z
- Udemy: Computer Vision