ABRAR AHSAN

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EDUCATION

B.Eng - Electrical & Computer Engineering

Ryerson University

Sep 2016 – Apr 2022 Toronto, ON

Minor: Mathematics CGPA: 3.06

EXPERIENCE

Research Assistant - Robotics and Computer Vision

Ryerson University

May 2020 – Present Toronto, ON

- Researched topics surrounding the use of deep learning methods for robotic navigation applications. Topics focused on camera-based navigation using supervised learning techniques with features learned from image data alone
- Developed shallow convolutional neural network and implemented on a neuromorphic vision sensor for navigation in corridor and racetrack environments using Jetbot chassis
- Integrating visual odometry data with wheel encoder for localization purposes with Extended Kalman Filter (EKF) and comparing against ground truth captured by a vicon system

Python | C/C++ | Keras | Computer Vision | Robotics | Deep Learning

Operations Intern

Independent Electricity System Operator (IESO)

Jun 2020 – Aug 2021 Mississauga, ON

- Developed software solutions to automate the process of updating the import/export limits across multiple Day Ahead Commitment Process (DACP) tools and reduce the chances of errors arising and creating audit trail for changes made
- Improved overall workflow by introducing automation tools to run calculations effectively from extracted data, reducing process runtime by 60%

Python | Tableau | VBA | Power System | WS500

Programs Analyst

De Havilland Aircraft of Canada/Bombardier

May 2018/19 – Aug 2018/19 North York, ON

- Developed the Corrosion Reporting and Database Software (CPCP) for the Dash8 and CRJ series aircraft to be used by over 100 airlines for reviewing Maintenance Reports

VBA | Maintenance Engineering | Adobe FrameMaker

EXTRACURRICULAR EXPERIENCE

Electronics Team Captain

Ryerson Cansat

Sep 2016 – Jul 2019

- Designed and implemented the electronic sensor payload using sensors, Arduinos and Raspberry Pi for telemetry collection while ensuring proper power distribution throughout the system
- Developed the flight software to collect sensor data and transmit it to the ground station. It utilized altitude information to change operating state from pre-flight, falling, deployed, landed.

C/C++ | Design Team | Sensors | Eagle

SKILLS

Programming Languages & OS
Python(OpenCV, NumPy, Pandas, Keras), C/C++, MATLAB, Java, LaTeX, Git, Bash, SQL, Linux/Unix, Windows

Design Software
ETAP, Simulink, Multisim, Eagle, Cadence, Tableau

COURSEWORK

Software
Software Systems, Algorithms & Data Structure, Intelligent Systems & Machine Learning, Image Analysis & Processing, Digital Signal Processing

PROJECTS

Autonomous Navigation of Turtlebot in Simulated Gazebo World
Implemented a shallow CNN Robotic Navigation Network using Python and Keras by collecting images from custom Gazebo environments. The network was trained and verified on more image datasets before implementing on a turtlebot for high-speed navigation on racetrack and corridor environments.

Python | C++ | ROS | Keras | Robotics | Gazebo | Computer Vision | Deep Learning

Eye Gaze Tracker
Implemented a gaze tracker by using a pre-trained weights to construct a facial map and follow the location of the eye on a live camera feed.

Python | NumPy | Computer Vision

Project Kindling Discord Bot
Led a team of developers to build an announcement and data collection bot for the Project Kindling Discord Server. New bot is under development to shift away from Python to Javascript.

Python | Javascript | Discord API

Ladder Iterative Load Flow
Implemented a load-flow solution using the ladder-iterative technique for single phase buses. The results of this application were verified using PandaPower.

Python | NumPy | Pandas | Power Systems