

# DILJOT DOLA SAINI

3<sup>rd</sup> Year Electrical Engineering Student



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## EDUCATION

Bachelor of Engineering - Electrical Engineering

McMaster University (Hamilton, ON)

Graduation: 2024

- Maintaining a cumulative GPA of 3.4/4.0 scale (Currently in 3<sup>rd</sup> Year)
- Dean's Honor List (2<sup>nd</sup> Year)

## PROGRAMMING SKILLS

- Software Knowledge: Java, Python, C, C++, MATLAB & Simulink, Verilog HDL, R, Assembly/Machine Language, HTML, CSS, JavaScript, Linux
- Software Programs: Microsoft Office, Microsoft Excel, Waveforms, Quartus II, LTSpice, AUTODESK INVENTOR
- IDE/Version Control: Eclipse, Xcode, Visual Studio Code, Keil, GitHub, GitLab, Jupyter Notebook

## HARDWARE SKILLS

- Hardware Knowledge: Breadboarding, Circuit Wiring, Oscilloscope Analysis, Logic Design, Soldering, Analog 2 Discovery, logic analyzer, PCB
- Microcontroller Knowledge: Raspberry Pi 4, Arduino Uno, MSP432E401Y microcontroller, I2C, UART, SPI

## PROJECTS

**Loan Prediction Machine Learning Project:** December 2020 – *Individual Project*

- Developed a **Python** program that predicts whether a loan of an applicant can be paid back
- Learned how to use **Pandas, Matplotlib, Seaborn, and SciKit – Learn** libraries to organize and analyze the dataset
- Effectively used machine learning algorithms such as **Logistic Regression** and **Decision Tree** on the trained dataset from Kaggle
- Obtained great results as the model demonstrated an accuracy of at least 70% on the prediction

**3D Environment Mapping Project:** January 2021 – April 2021 – *Individual Project*

- Creatively designed an embedded system with an MSP432E401Y microcontroller stepper motor, and Time of Flight Sensor (operates via Lidar technology) to collect spatial data and create a 3D render of it on Python using **Open3d, PySerial, and Numpy**
- Effectively implemented a program (programmed in **C**) to collect data from the sensor via **I2C** and transfer that data to Python via **UART**
- Used AUTODESK INVENTOR to design and 3D print a mount for the sensor to be installed on top of the stepper motor
- The embedded system demonstrated 100% usability as it was able to accurately model the 3D environment it was situated in, such as a room

**Automated Gardening:** June 2021 – August 2021 – *Group Project*

- Designed and engineered a gardening embedded system that automatically waters and grows plants
- Collaborated with another individual to creatively design and 3D print the garden housing and watering system using **AUTODESK INVENTOR**
- Effectively programmed an Arduino Uno using **C++** to run water pumps based on soil moisture levels and conditions from sensor data
- Demonstrated the usability of the system by automatically growing green onions in 3 weeks

**Facial Recognition Door Lock:** August 2021 - September 2021 – *Group Project*

- Designed an accurate facial recognition model using convolutional neural networks (CNN) in **VGG16** with the **keras** and **tensorflow** libraries
- Created the embedded system by using RFID scanners along with a keypad to enter in a pin code for the respective user to increase security
- Effectively designed the components of the door lock to work together and the facial recognition model achieved a confidence level of 75%

## EXPERIENCE

**McMaster Formula Electric Software Embedded Team Member:** October 2020 – Present (Hamilton, ON)

- Developed an extensive testing tool using **Raspberry Pi 4** designed to check for bugs and limitations on the **STM32** microcontrollers
- Specifically tested the serial communication requirements through **I2C** with modules coded in **Python** for **MPU9250 accelerometer**
- Made effective use of object-oriented concepts by creating a class that visually outputted the x, y, and z acceleration of the **MPU 9250 accelerometer**
- Effectively used **GitLab** to collaboratively work with the team to code the testing modules, worked as a team for software development and use **Microsoft Word** to document project

**Bolton Home Depot Kitchen/Appliances Sales Associate:** May 2021 – August 2021 (Bolton, ON)

- Effectively worked in a fast-paced environment to accomplish required tasks with a team, while helping customers and answering their questions
- Gained effective communication and teamwork skills while working with the department team, and learned how to deal with stressful situations while serving customers
- Demonstrated leadership in the department to guide new associates in working towards achieving department goals
- Accelerated in appliance sales, generating personal sales of around \$5,000 a week, helping the department team surpass sales goals