Liviru Abey

3356, Erin Centre Blvd, Mississauga, ON, Canada, L5M 8C3

📞 647-390-8488 ✉ dgliviruabey@gmail.com 🔗 linkedin.com/in/dgliviruabey/ 🐙 github.com/liviruA

EDUCATION

McMaster University   **Sep. 2021 – Present**
Bachelor of Engineering in Mechatronics Engineering and Management   *Hamilton, ON*
- GPA – **3.7** on a 4.0 scale | A **Mechanical Member** of **McMaster Mars Rover team** and **RoboMasters**

RELEVANT COURSEWORK

- Data Structures
- Embedded Systems
- Braitenberg Vehicles
- Algorithms Analysis
- Operating Systems
- Software Development
- Signals and Systems
- Systems Programming
- Data Structures
- Algorithm Mechanics
- Control Physical Systems
- Analog and Digital Circuits

EXPERIENCE

McMaster Mars Rover Team   **Jan. 2022 – Present**
Mechanical Engineering Team Member   *Hamilton, ON*
- * **Co-led** and redesigned the auger of the rover using **Maple**, **MATLAB** and **FlexPDE** and won **1st place** in creating "The Faraday Rover V1.5" science module for **the Canadian International Rover Competition 2023**, showcasing strong **teamwork and technical skills**.
- * Manufactured rover arm components with under **0.0001 in.** tolerances improving the arm's mobility showcasing expertise in **lathe, milling, cutting, and drilling.**
- * Redesigned rover wheel side plates using **SolidWorks** and **FEA** reducing significant payload by **3kg** with rigidity.

Peel District School Board   **Jan. 2019 – Jun. 2019**
Private Tutor/ Teaching Assistant   *Mississauga, ON*
- * · Taught students with **mathematical** courses using software such **MATLAB** and **R increasing their grade up by 40%.**

PROJECTS

Pacemaker DCM (GUI) | *Python, PySerial (Serial Communication), Tkinter, FRDM K64*   **3K04 Course - McMaster Unversity**
- * Developed an **embedded system** which receives data from pacemaker users and emit appropriate electrogram data using **Python's Tkinter** with the incorporation of the **PySerial** module for **serial communication** between the DCM and a **FRDM K64** board (pacemaker and heart).
- * Practiced **modularization and hardware/information hiding** improving maintainability and implemented a robust **JSON** database reducing data **retrieval time by 40%** and increased overall system **performance by 25%.**

Intersection Design | *Python (OOP), Google Scholar*   **2PX3 Course - McMaster University**
- * Simulated an intersection using **Python OOP** optimizing an intersection containing vehicles and pedestrians with safer interactions compared to usual intersections using **V2X** communication.
- * Factors such as **crashes with a probability of 10%** as well as **CO_2 emission calculations** were included within the simulation using thorough research about present intersections in order to simulate a more realistic model.

Robotic Arm | *Python (OOP), Quanser Lab, Raspberry Pi*   **1P13 Course - McMaster University**
- * Using a **Raspberry Pi**, generated a **Python**-based **API** robotic arm control system, demonstrating expertise in **OOP** while utilizing sensor inputs of the user's body for task automation improving multi-task operations.
- * Utilized **Quanser interactive labs** to stimulate the software while managing system uncertainties, enhancing the understanding of real-world operational challenges.

Digital Student Number Display | *Multisim, BreadBoards, Logic Gates*   **2E04 Course - McMaster University**
- * · Designed a **digital circuit** displaying my student number on a **7SD** at a desired frequency using **Multisim software**.
- * · Gained knowledge about **sequential logic** and **J-K flip flops'** role in creating desired sequences using truth tables and **K-mapping** and built the final product using **5 J-K flip flops, 4 IC chips (10 AND gates, 4 OR gates)** in total.
- * · Gained rigorous experience in using various components including **breadboards, 7SD decoders, logic analyzers, oscilloscopes, and AC/DC power supplies**.

TECHNICAL SKILLS

Languages: Python, C, C++, HTML/CSS, JavaScript, React, Maple, FlexPDE, Julia, MATLAB, R, Latex, Excel
Developer Tools: VS Code, Git, Bash, VirtualBox
Other: Linux, GitHub/GitLab, Granta EduPack, Circuitry Analysis, Multisim, 3D-Printing, PrusaSlicer