JOANNE RIZKALLAH

+96181270243 | joanne.j.rizkallah@gmail.com | LinkedIn | Project Portfolio

EDUCATION

Lebanese American University, *Bachelor of Engineering in Mechatronics Engineering* *Sept 2020 – Present*
Awarded an Honors scholarship and the MEPI TLS scholarship, CGPA 3.83 Expected date of graduation Spring 2025

College Notre Dame de Louaize, *Lebanese Baccalaureate in General Sciences*
Top of English section with an average of 17.14/20

SKILLS

Python, NVIDIA Omniverse, Java, MATLAB, Solidworks (CSWA), FastAPI, Raspberry Pi, artificial neural networks, Arduino, Unity (Junior Programmer), C#, Simulink, Simscape, myRio.

PROFESSIONAL EXPERIENCE

BMW Group, *Simulation Engineer* *Feb 2024 – Aug 2024*

- Integrated and extended a **training and inference API** for **3D deep learning models** into **NVIDIA Isaac Sim** by creating a user-friendly extension to train and test with different dataset and training configurations, and filter and visualize results.
- Contributed to the SORDI.ai dataset by successfully leveraging **NVIDIA Isaac Sim**'s **RTX LiDAR** to automate the generation of **synthetic point clouds** corresponding to hundreds of 3D scenes.
- Meticulously scanned, cropped, downsampled, filtered, and annotated real point clouds using **Cloud Compare** and NVIDIA Isaac Sim for labelling. Generated statistics and **Python** scripts to automate the above tasks.
- Extensively researched **domain adaptation, neural styling**, and optimization techniques such as **genetic algorithm**s and proposed a statistical approach to bridge the domain gap between synthetic point clouds and real point clouds.
- Developed duplication and editing features of configuration files for an already existing extension in Isaac Sim.

inmind.ai Academy, *Intern* *Jul 2023 – Aug 2023*

- Worked on AI projects related to topics such as natural language processing (**NLP**), **neural networks**, and **object detection**.
- Developed robotics projects and learned **C++**, **ROS2 Humble**, and **CMake**..

Yayy.io, *Intern* *June 2021 – Sept 2021*

- Grasped a firm technical and logistic understanding of game development using the **Unity** platform and **C# scripting**.
- Developed basic games and followed courses on Unity.

Prepak Indevco Group, *Intern* *Jun 2023 – Jul 2023*

- Delved into the industrial world by working with production and maintenance engineers. Tasks included participating in maintenance activities and aiding the production engineers in managing projects inside the plant.

Lebanese American University, *Tutor* *Sept 2021 – Dec 2022*

- Recommended by Chair of department to tutor computer and engineering programming courses and to increase student learning skills.

PROJECTS

A 3D-Printed Robotic Gripper *Spring 2024*

- A **soft robotic gripper** with soft pneumatic sensing chambers and a camera to identify the ripeness of the fruit, efficiently mimicking real world scenario of picking a produce in the supermarket.
- Stiffness is determined using sensor data collected from the **pressure sensors** and feeding it to a **Random Forest model**, and 3 **computer vision models**: Fruit **classification** with VGG16, **object detection** with yolov5, and ripeness classification with a smaller version of VGG16.
- **PID control system** is used to safely grasp the object based on the stiffness.

MEPI TLP: Towards the End of Period Poverty, *Mechatronics Engineer* *Jan 2023 – Sept 2023*

- Worked in a U.S. funded project that aims at building a production line for sanitary pads. Roles include working with the **instrumentation team** and **managing** overall team activities.
- Won 1st place in VIP+ academia day and 2nd place in global VIP Consortium at Georgia Tech Institute.

HeroBot *Spring 2023*

- HeroBot is a **Raspberrypi** based rover with a Pi camera able to detect victims using a **convolution neural network** and **custom dataset**.
- An optimal **maze solving algorithm** reaches the victims,
- **Fuzzy-based cruise control** and can be teleoperated using **Python's CustomTKinter**.

Nabboul The Magician Robot *Nov 2022 – Dec 2022*

- Nabboul can do various tricks by relying on **Arduino** and operates on **speech recognition** using **cosine similarity in Python**.
- Nabboul has a **light detector sensor, servomotors, a hall-effect sensor, buck converter, and dc motors**.

Virtual Reality Gallery Demo *Jun 2022 – Sept 2022*

- Worked on a **gallery demo project** using **Unity** and **C#** scripting for **VR interaction** with **Oculus**.
- The project includes XR interaction toolkit, **teleportation** and configured controllers with **haptic and sound feedback, animations,** scaled to real size objects, **grabbables,** and **interactive UI**.

Smart Wheelchair, *Team Member* *Spring 2022*

- Developed a user-centered smart wheelchair with **myRio**.
- The wheelchair operates on **speech recognition** on **Python** using cosine similarity, has optional user interface on **Labview**, a solar battery, and brightness **control**.

EXTRACURRICULAR EXPERIENCE

Association des Guides Du Liban at Deutsche German School, *Chief of Group* *Oct 2017 – Feb 2024*

- Nominated by the association as chief of group, responsible for organization and surveying quality of activities, camps, and training for more than 50 girls, and organize annually Oktoberfest and Sommerfest with school's administration.

Developer Student Club, *Core Team Member* *Sept 2020 – Dec 2020*

- Wrote newsletter for AY 2020-2021.

MMKN, *Instructor* *Sept 2020*

- Taught underprivileged 8th graders physics.