Mostafa Rawas Kalaagi

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EDUCATION

American University of Beirut (AUB), Beirut, Lebanon   **September 2019-May 2023**
Bachelor of Engineering in Mechanical Engineering and a Minor in Economics
Graduate Courses Taken: Vehicle Dynamics and Control/Design of Thermal Systems/F1tenth Course/Robotics

Beirut Baptist School, Beirut, Lebanon   **September 2016 – June 2019**
Lebanese Baccalaureate in General Sciences

PROFESSIONAL EXPERIENCE

Hospital Hôtel-Dieu de France, Beirut, Lebanon   **August 2022-October 2022**
Biomedical Engineering Intern
- Maintained, repaired, and calibrated over a hundred B Braun infusion pumps, perfusors, and defibrillators.
- Assisted engineers in their daily tasks such as repairing, maintaining, and setting up biomedical devices.

EV Electra S.A.R.L., Khalde, Lebanon   **June 2022-August 2022**
Research and Development Intern
- Researched the feasibility of installing a vertical axis wind turbine on the Khalde highway to generate power.
- Designed a water-cooling system for an electric vehicle by conducting heat transfer analysis.
- Evaluated spaceframe and unibody chassis and advised the company on what chassis type to adopt.
- Developed a smart phone controlled 5 DOF robotic arm using 3D printed parts, an Arduino, motors, and modules.

Middle East Airlines, Beirut, Lebanon   **December 2021-January 2022**
Aviation Intern
- Learned about all aircraft systems and how they work for the Airbus a320 family of aircraft.
- Gained firsthand experience on procedures and tasks that engineers undergo to safely maintain an aircraft.

PROJECTS

Monitoring Aerosol Concentrations from Electronic Cigarettes - Final Year Project   **August 2022-May 2023**
- Building, calibrating, and validating a sensor that can measure mass concentrations emitted by Ecigs in real time.
- Utilizing LabVIEW to display results and control parameters to achieve different outputs.
- Integrating the instrument into an already existing smoking machine.

Control of a KUKA Youbot – Robotics Project   **April 2023-May 2023**
- Developed an autonomous cube sorting robot using Rviz, MoveIt, ROS2 Foxy, Python, and a KUKA Youbot.
- Integrated a camera to the Youbot to detect QR codes on the cubes using computer vision libraries.
- Implemented kinematics and inverse kinematics algorithms to control the KUKA Youbot.

F1tenth – Autonomous Racecar Competition   **November 2022-May 2023**
- Completed the F1tenth coursework which includes designing and programing autonomous 1/10th scale racecars that can navigate through a complex racetrack.
- Developed algorithms such as automatic emergency braking, wall following, follow the gap, pure pursuit, and RRT, using a simulator that runs natively on Ubuntu 20.04 and ROS2 Foxy.

Vehicle Dynamics and Control Project   **August 2022-December 2022**
- Selected a vehicle of my choice to extract appropriate parameters needed for vehicle dynamics analysis.
- Simulated the vehicle in a variety of conditions such as acceleration, deceleration, single lane change maneuver, J turn/Rollover, and going over a speed bump while making use of MATLAB and Simulink.

Object Transportation Mechanism – CAD Project   **April 2021- May 2021**
- Modeled on Autodesk Inventor a series of mechanisms that move objects in a certain path.
- Utilized dynamic simulation to simulate the transportation process.
- Conducted stress analysis to see if the system of mechanisms works properly.

EXTRACURRICULAR ACTIVITIES

AUB Robotics Club
- **President**   **September 2022-June 2023**

CERTIFICATIONS

Coursera: "Robotics: Aerial Robotics & Mobility" given by the University of Pennsylvania   **June 2021-July 2021**
Certificate of Completion of Game Academy Workshops given by Khaddit Beirut   **June 2021-July 2021**

SUMMARY SKILLS

Languages: English (Native Proficiency)/Arabic (Native Proficiency)/French (Elementary Proficiency)
Programming Languages: MATLAB/Python/C++/Simulink/NI LabVIEW
Skills: Inventor Professional/Creo Parametric/AutoCAD/Revit/SolidWorks/ROS2/Linux/Arduino/Microsoft Office
Soft skills: Communication/Public Speaking/Leadership/Time Management/Hard Worker