THEODOR CHAKHACHIRO

Ann Arbor, MI

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Education

University of Michigan	**August 2021 – present**
MSc in Robotics	*Ann Arbor, MI*

American University of Beirut	**August 2016 – May 2020**
Bachelor of Engineering in Mechanical Engineering	*Beirut, Lebanon*

Work Experience

Dar Al-Handasah Shair and Partners	**June 2017 – August 2019**
Mechanical and Control Engineer Intern	*Beirut, Lebanon*

- Design and management of control systems for multiple projects in Africa and the Middle East under the Control and Instrumentation unit of the Mechanical Engineering Department. Weekly updates and meeting presentations were held to update the client of the progress.
- Supervised various Electro-Mechanical Systems during the works involved in the Project DEPARTURE UPGRADE – STAGE 1 AT RAFIC HARIRI INTERNATIONAL AIRPORT that are not limited to the installation of the following: Operation and testing of the Baggage handling system, Escalators and Lifts, Plumbing and Drainage, Firefighting system, HVAC, Duct works, Building Management System and RFID systems.
- Supervised the installation and functioning of HVAC systems such as chillers, FAU and AHU at Beirut-Rafic Hariri International Airport.
- Supervised the process of mounting, unloading and operating gantry cranes, Ship-to-Shore cranes and Rubber Tyred cranes at the new Tripoli port.

Research Experience

University of Michigan	**August 2021 – present**
Graduate Student Research Assistant at the CURLY Lab	*Ann Arbor, MI*

- Working with the Michigan RobotX Team under the supervision of Prof. Maani Ghaffari.

American University of Beirut	**August 2019 – February 2021**
Research assistant at the Vision and Robotics Lab (VRL)	*Beirut, Lebanon*

- Worked on a new evaluation metric to assess the performance of map alignment techniques. The proposed metric automatically generates error measurements between the alignment displacement field and its corresponding ground truth. In addition, a ground truthing dataset upon which any map alignment method can be assessed was proposed.
- Worked on a parametric model and a generative adversarial network (GAN) to create SLAM maps from as-built floor plans. These models act as high-fidelity replacement for real-time simulation. The machine learning model was also trained to provide as-built floor plans given a SLAM map which can be utilized to improve localization during real-time navigation.

Teaching Experience

American University of Beirut	**August 2020 – May 2021**
Teaching assistant at the Mechanical Engineering Department	*Beirut, Lebanon*

- Assisted Prof. Daniel Asmar in the lecture and lab parts of MECH 430: Instrumentation and Control course. Corrected quizzes and homework assignments of third year mechanical engineering students.
- Assisted Prof. Ghanem Oweis with the coordination of senior mechanical engineering students' final year project.

Technical Skills

Languages: Python, Matlab, C, C++, Assembly, Arduino
Design: Solidworks, PTC Creo, Fusion 360, ANSYS, AutoCAD
Technologies/Frameworks: Linux (Ubnutu ROS kinetic), GitHub, Raspberry Pi

Publications

1. R. Daher, T. Chakhachiro and D. Asmar, "A Novel Method For Map Alignment Assessment Using Synthetic Displacement Fields," 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), 2021, pp. 148-155, doi: 10.1109/AIM46487.2021.9517384.