

THEODOR CHAKHACHIRO

Ann Arbor, MI

☎ (734) 353-3032 ✉ teochiro@umich.edu [in linkedin.com/in/teochiro](https://www.linkedin.com/in/teochiro) [🌐 theodorchakhachiro.netlify.app](https://www.theodorchakhachiro.netlify.app)

Education

University of Michigan

MSc in Robotics, CGPA: 4.13/4.0

August 2021 – April 2023

Ann Arbor, MI

American University of Beirut

Bachelor of Engineering in Mechanical Engineering

August 2016 – May 2020

Beirut, Lebanon

Work Experience

Dar Al-Handasah Shair and Partners

Mechanical and Control Engineer Intern

June 2017 – August 2019

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.

Research Experience

University of Michigan

Graduate Student Research Assistant at the CURLY Lab, Supervised by Prof. Maani Ghaffari

August 2021 – present

Ann Arbor, MI

- Working on a Museum Docent initiative using a wheeled robot (Fetch) in collaboration with the University of Michigan Museum of Art. My job includes creating a 3D semantic map of the environment along with relevant static and dynamic landmark poses as well as optimizing the trajectory for motion planning and time efficient touring using Inverse Reinforcement Learning. To date, one paper got published to RO-MAN 2022.
- Working on a robust outdoor state estimator for wheeled (Husky AGV) and legged (MIT MiniCheetah) robots in collaboration with Toyota Research Institute. My job includes updating the team on the pipeline by presenting the ideas inspired by SOTA papers, implementing the undisclosed pipeline on the platforms by writing code and collecting data.

American University of Beirut

Research assistant at the Vision and Robotics Lab (VRL), Supervised by Prof. Daniel Asmar

August 2019 – February 2021

Beirut, Lebanon

- Worked on a new evaluation metric to assess the performance of map alignment techniques on SLAM maps. One paper got published to AIM 2021.
- Worked on a parametric model and a generative adversarial network (GAN) to create SLAM maps from as-built floor plans. One paper got published to ICPR 2022.

Teaching Experience

American University of Beirut

Teaching assistant at the Mechanical Engineering Department

August 2020 – May 2021

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

Coding Languages: Matlab, C++, Python, C, Assembly, Arduino, Mathematica

Design: Solidworks, PTC Creo, Fusion 360, ANSYS, AutoCAD

Technologies/Frameworks: Linux (Ubuntu ROS, LCM, Docker, NVIDIA Isaac Sim), Git, Raspberry Pi

Relevant Courses: Model Predictive Control, Adaptive Control, Adaptive Robust Control, Non-Linear Systems Theory, System Identification, Mobile Robotics (State Estimation using InEKF, SLAM), Self-Driving Cars, Convex Optimization

Publications

1. T. Kathuria, Y. Xu*, T. Chakhachiro*, X. Yang and M. Ghaffari, "Providers-Clients-Robots: Framework for spatial-semantic planning for shared understanding in human-robot interaction", 31st IEEE International Conference on Robot & Human Interactive Communication (RO-MAN), 2022.
2. R. Daher, T. Chakhachiro and D. Asmar, "From SLAM to CAD Maps and Back Using Generative Models", 2022 IAPR International Conference on Pattern Recognition (ICPR) 2022.
3. 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.