

OMAR SALEM

Control and Robotics Engineer

STRENGTHS

Python Matlab Simulink

Octave Robotics Maths

MS Office Linear Algebra

Linux C/C++ ROS

SLAM Navigation

Computer Vision

LEARNING

JavaScript

Data Analysis

Machine learning

Real Engine

LANGUAGES

Arabic: **Native**

English: **Fluent**

Italian: **Moderate**

German: **Beginner**

ABOUT ME

Seeking a career opportunity where I can develop and enhance my intellectual abilities as well as obtain a challenging position in a productive and creative environment where my academic skills and experiences can be utilised to add value to the organisation's operations and overall welfare. I would like to be able to implement my innovative ideas, skills and creativity by accomplishing projects and being part of the change.

EDUCATION

PH.D. in Computer Science and Robotics | [Sapienza University of Rome](#)

📅 Jan 2022 - Present

📍 Rome, Italy

Nano-Degree in Advanced Data Analysis | [Udacity](#)

📅 Aug 2021 - Oct 2021

📍 Online Degree

MSc. Control Engineering and Robotics | [Sapienza University of Rome](#)

📅 Sep 2017 - March 2021

📍 Rome, Italy

- GPA: 107/110

BSc. Mechatronics Engineering | [German University in Cairo](#)

📅 Oct 2012 - July 2017

📍 Cairo, Egypt

- GPA: 2.3(very good)

PROJECTS

- LiDAR based de-skewer, to render the LiDAR sensor measurements more reliable and robust. Published in *AIxIA 2023* <https://arxiv.org/abs/2303.07312>
- Camera-LiDAR calibrator to estimate the extrinsic parameters(relative transformation) between, both sensors, using minimal user interaction, and simple target. Submitted in *MDPI* <https://arxiv.org/abs/2309.07874>
- VBR: Vision benchmark in Rome. A multi-sequence, multi-environment dataset, including various sensor measurements. Submitted in *ICRA 2024* <https://arxiv.org/abs/2309.07874>
- BA photometric strategy that accounts for both RGB-D and LiDAR in the same way. It can be used on top of any SLAM/GNSS estimate to improve and refine the initial trajectory. Published in 2023, *IEEE ROBOTICS AND AUTOMATION LETTERS* <https://arxiv.org/abs/2303.16878>
- Applying bundle adjustment technique with an omnidirectional fish-eye camera,initializing a map, acquiring landmark data using the camera , re-localizing robot using PICP, and tracking it's path
- Modelling and control analysis of forces, for the augmentation process of a 2R robotic arm, to a lightweight UAV
- Graph based SLAM and Calibration using Least Squares optimization for a differential drive robot

- Flexible collaborative transportation by a team of rotor-crafts using graph theory and decentralized control concept
- Application of different types of controllers, for trajectory tracking, of an under-actuated pendulum, to reach stability state
- Adaptive trajectory control of a 3R robot arm, with unknown drive gains
- Applied a multiple types of 2d-Lidar ScanMatchers, to recover the map of the environment and trajectory of platform, using only the Laser Scanner as input
- A Robot simulator, which given the data of the map, can give the ground truth dataset of the map, depending on the chosen sensors (In Progress)

EXPERIENCE

Teacher assistant | [Sapienza University of Rome](#)

📅 Jan 2023 – Present

📍 Rome, Italy

- Teacher assistant of Probabilistic Robotics course. Demonstrating visually and mathematically how sensors function, and how can we utilize sensors for map construction and localization of mobile robots

Teacher assistant | [Sapienza University of Rome](#)

📅 Jan 2022 – 2023

📍 Rome, Italy

- Collaborating in a course of Robot Programming, where we (as a team) try to guide new students to have hand-on experience with robot, and gain confidence for programming.

Collaboration student | [Sapienza University of Rome](#)

📅 March 2019 – July 2019

📍 Rome, Italy

- Worked as a computer science library coordinator
- Taught bachelor students a Matlab introduction course

Math Tutor | [Tutorama](#)

📅 Oct 2016 – July 2017

📍 Cairo, Egypt

- Private math teacher
- Specialized with students with down syndromes and disabilities

Intern | [Invensys Schneider electric Egypt](#)

📅 Aug 2016 – Sep 2016

📍 Cairo, Egypt

- Safety and control systems simulations
- PLC control, with fox interface

Intern Engineer | [Fourseasons Hotel, Nile plaza](#)

📅 July 2014 – Sep 2014

📍 Cairo, Egypt

- Overlooking maintenance issues
- Communication with technicians to handle day to day problems
- Assistant to project manager, to achieve required tasks and objectives

Admission office-Intern | [German University in Egypt](#)

📅 June 2014 – July 2014

📍 Cairo, Egypt

- Assisted candidate students to smooth the operation of applying
- Worked with my team to ensure satisfying service for students and parents