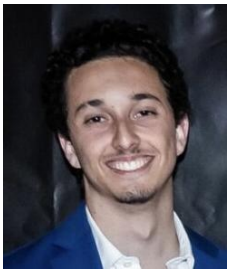

Ismael Monge Rouchdi

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LinkedIn | GitHub

Education

Master's degree in Robotic and Interactive Systems – University of Toulouse III, Toulouse *2023-2026*
Bachelor's Degree in Electronics, Electrical Energy, and Automation - University of Toulouse III, Toulouse *June 2023*

Personal projects

Continental Hackathon "HACK2MOVE" *2024-2025*

- Participated in the Continental Toulouse Hackathon, received **recognition from the factory manager**, André Goncalves, for our project idea, who **confirmed** the start of its development with his team a few days later.

Formula Student - Driverless Formula *2024-2025*

- **Selected** to represent Toulouse in an international competition to develop a **fully autonomous** racing car, focusing on achieving full vehicle autonomy at both low and high speeds, with real-time adaptation to weather conditions.
- Worked on the vehicle's autonomy, primarily focusing on the **software** aspects related to vehicle **perception**, including traffic cone **position detection**, sensor fusion modeling, and stereo depth estimation.

Head of the microcontrollers team at the Robotics club *2024-2025*

- Currently **building** up and programming a **robotic industrial arm** from scratch. It should be able at the end to pick objects of interest detected by a camera attached to it and move them as commanded within its range of motion.

Academic projects

Robot trajectory and speed planning (Engineering_Consultancy_Robotic_Modeling on GitHub) *2024-2025*

- Developed a **kinematic model** of an **RRR** robotic arm, calculating its linear, angular and joint velocities, as well as planning its circular trajectory.
- Implemented the 3D visualizations and **movement animation** to represent its position in real-time, allowing an interactive and **precise simulation** of its performance.
- Ranked as **Top1** project of the class.

Autonomous Mobile Robot (MobotSim & Mobot on GitHub) *2023-2024*

- **Led** the project by structuring the plan and managing internal communications for **task distribution** while also serving as the primary point of contact with the client.
- Ranked as the **Top 1** voice commands recognition system by the jury, professionals from this particular domain.
- Designed a 4-wheel mobile robot capable of **scanning** a room, receiving and executing **voice commands**, navigating the room **without hitting walls**, and **detecting** and **differentiating obstacles**.

Industrial automation (link) *2023-2024*

- **Completed automation** of a model simulating an **industrial chain** for picking up and placing objects in soaking tanks using the model's simulation, state graphs and C language.

Research work on wireless power transfer, WPT (link) *2022-2023*

- Studied **wireless power transfer** at short and long distances and its potential future applications.
- Investigated the structure of a **rectenna** and the behavior of the rectifier and diode.

C Program for Electronic Circuits (link) *2022-2023*

- Implemented a process using a file describing the components used in a circuit, able to **calculate the impedance** of these, as well as the **current** in each loop and the **gain in dB** to ultimately plot a **Bode diagram**.

Skills

Languages: English (Proficient), French (Native), Spanish (Native), German (Beginner)
Robotics: Robotic kinematics & trajectory planning, Control of discrete and sequential Systems, Computer vision & processing (OpenCV), Speech processing & recognition, Machine, deep & reinforcement learning (TensorFlow, PyTorch)
Programming: C, Python, C++, Multitasking programming, Java, Arduino, VHDL, Val3, ST
Software: MATLAB, ROS/ROS2, UNIX, Git, Stäubli Robotics Suite, Octave, LTSpice
Hardware: STM32F4, NVIDIA Jetson Xavier 16GB, LiDAR, Stereo camera
Soft skills: Curiosity, creative problem solving, clear communication, efficient organization, teamwork

Professional Experience

Ski Instructor *2018-Present*

- Taught skiing lessons to individuals of **all levels**.
- Developed clear **communication skills** to effectively instruct students with different attention spans.
- Strengthened my **leadership** by managing group lessons with students of **diverse personalities**.
- Enhanced **problem-solving** by addressing challenges and providing support based on each student's mentality and skills.