Mohamed Eyad



Robotics Engineer · ROS 2, control, perception, rehabilitation robotics

Building robots that work on real hardware, in industry and healthcare.

Location Genova, Italy · open to relocation **Availability** Immediate (MSc defense Dec 2026)
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GitHub github.com/mohamedeyaad **Portfolio** mohamedeyaad.github.io

PROFILE

Robotics engineer who enjoys making robots work on real hardware, alongside the people who use them. MSc in Robotics Engineering at the University of Genova, with the thesis carried out at ETH Zurich: a real-time ROS 2 system that fuses wearable sensors with an on-device language model to support rehabilitation. BSc in Mechatronics Engineering from Ain Shams University (6th in class). Experience in research labs, a rehabilitation lab with patients, and university teaching. My goal is to grow into a senior robotics and control engineer on industrial and medical systems that go into real use.

EXPERIENCE

Mar – Aug 2026 — **MSc Thesis Researcher** · SCAI Lab, ETH Zurich & DART Lab, Lake Lucerne Institute, Switzerland

- Built a real-time ROS 2 pipeline fusing HRV (Polar H10) and pupil data (Pupil Labs Neon) into a live cognitive-load index, with spoken feedback from a local LLM (Qwen 2.5 3B via Ollama, Piper TTS) on an NVIDIA Jetson AGX Orin.
- Ran a 12-participant treadmill study: the index tracked the mental task in all 12 participants and agreed with NASA-TLX ratings (r = 0.80).
- Developed the Pupil Labs Neon ROS 2 driver and eye-tracking message types, merged into the open-source ROS4 Healthcare framework.

Jan – Jul 2024 — **Research & Lab Engineer** · Human-Centered Mechatronics Lab, Ain Shams University, Cairo

- Ran biomechanical and gait studies with Qualisys motion capture, AMTI force plates and Delsys Trigno EMG.
- Operated the Fourier ExoMotus X2 exoskeleton with spinal-cord-injury patients, controlling its walking behavior through ROS (admittance control) and troubleshooting faults.
- Tested EEG systems, 3D-scanned and printed medical components (EinScan HX, Raise3D E2), and supported student teams.

Sep 2023 – Aug 2024 — **Teaching Assistant** · Faculty of Engineering, Ain Shams University, Cairo

- Delivered lab sessions for Design of Mechatronic Systems and Control System Design (MATLAB/Simulink, SolidWorks, CoppeliaSim, ROS, Arduino) and supervised robotics graduation projects.
- Trained 30+ students in a summer ROS course: TurtleBot navigation in Gazebo/RViz, OpenCV on Raspberry Pi, rosserial.

Sep 2023 – Jan 2024 — **Teaching Assistant** · UPEI Cairo Campus (University of Prince Edward Island), Cairo

- Prepared and presented tutorials and lab sessions for Control System Design and Project-Based Professional Practice I.

Mar – Oct 2023 — **STEAM Facilitator & Robotics Instructor** · Edu-Zone STEAM Learning Centre, Cairo

- Developed robotics and STEAM content and taught children aged 4 to 14 in hands-on project sessions.

EDUCATION

2024 – 2026 — **MSc Robotics Engineering** · University of Genova, Italy
Thesis at ETH Zurich (SCAI Lab) and the DART Lab, Lake Lucerne Institute: real-time ROS 2 multimodal sensing with LLM feedback for rehabilitation. Defense in December 2026.

2018 – 2023 — **BSc Mechatronics Engineering & Automation** · Ain Shams University, Cairo, Egypt
GPA 3.53/4, ranked 6th in class; graduation project (human-robot collaborative assembly) graded A+.

2020 — **Erasmus+ exchange semester** · University of Lancashire (formerly UCLan), UK
Mechatronics and Intelligent Machines; fully funded; grade: Distinction.

SELECTED PROJECTS

Write-ups, diagrams and videos: mohamedeyaad.github.io

2025 – 2026 — **ArUco marker missions: visual servoing and PDDL planning** · RICE Lab, University of Genova
The same autonomous mission solved two ways in ROS 2 Jazzy: a visual-servoing state machine with proportional control, taken from Gazebo to a real Husarion ROSbot 2; and PDDL task planning with C++ PlanSys2 action executors driving Nav2 (SLAM Toolbox, AMCL).
github.com/mohamedeyaad/ros2-plansys2-aruco-explorer · github.com/mohamedeyaad/aruco_visual_servoing

2025 — **Cognitive architecture for a search-and-rescue TIAGo** · team of 3, University of Genova
Modular architecture for mapping, victim triage, structural-risk assessment and reporting, prototyped in ROS Noetic with UML design and custom messages. Main contributor: diagrams, RiskReport message, launch files, rosbag test data and rostest integration tests in GitHub Actions CI.
github.com/waleedelfieky/CogArch-SAR-TIAGo

2023 — **Human-robot collaborative assembly** · BSc graduation project, grade A+
ABB IRB 120 controlled from ROS through EGM/RWS with MoveIt and a custom end effector; custom YOLOv7 detector for gears, bolts and nuts (97% accuracy) on two Intel RealSense D435i cameras; MediaPipe pose estimation and OctoMap for human-aware re-planning; Pocketsphinx voice commands and a Tkinter GUI.

2023 — **Step Scope: wearable gait monitor** · Biomedical Engineering course, grade A
Wireless insole with MPU6050 IMUs and force-sensitive resistors on an ESP32: plantar-pressure mapping, real-time gait-event detection, shank kinematics and a Python GUI.
github.com/mohamedeyaad/Step-Scope

2023 — **Control test rig for rehabilitation robotics** · course project, grade A
Single-joint DC-motor rig with encoder, load cell and current sensor; modeled in MATLAB/Simulink, then position, current, force, admittance and impedance control implemented on Arduino and compared on hardware.

2022 — **Robusta: autonomous service robot** · team project, grade A
Coffee-shop service robot: Gmapping SLAM and ROS navigation with an RPLidar on a Jetson Nano, per-wheel PID speed control with encoder odometry on an STM32, and customer emotion recognition.

SKILLS

Bold = advanced · *grey* = basic

Robotics	**ROS / ROS 2**, MoveIt, SLAM and navigation (Gmapping, Nav2), PlanSys2 / PDDL, Gazebo, RViz, CoppeliaSim, ABB EGM/RWS, Docker
Programming	**Python** (NumPy, Pandas, PyTorch), C/C++, MATLAB/Simulink, Linux, Git, software architecture and UML, rostest/rosbag testing, LabVIEW
Control & signals	PID and feedback control on real hardware, force/admittance/impedance control, sensor fusion and synchronization, biosignals (ECG/HRV, PPG, EMG, EEG), computer vision (OpenCV, YOLO), local LLMs on edge devices (Ollama)
Hardware	STM32, ESP32, AVR/Arduino, NVIDIA Jetson, Raspberry Pi, Qualisys, AMTI, Delsys EMG, CAD (Inventor, SolidWorks), 3D printing and scanning, Proteus, Altium Designer, PLC (Schneider Electric), RTOS
Communication	UART, I2C, SPI, Bluetooth Low Energy, Wi-Fi, ROS topics/services, rosserial
Languages	English C1 (professional) · Italian A2 · Arabic (native)

COURSES & CERTIFICATES

2023 IoT Fundamentals (Cisco Networking Academy)
2022 Robotics software training (ASmarine Academy)
2020 PLC & Industrial Automation (Schneider Electric)
2023 Internet of Things and AI (NTI)
2021–22 Embedded Systems Diploma (Embedded C, AVR)
2020 Introduction to Biomedical Engineering (Coursera)

INTERESTS

Building a robotics learning platform with remote access to real robots and simulation · teaching robotics and STEM · running, hiking and flying drones.

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