

Mario Sedilesu

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Research Interests

Human-Robot Interaction (HRI), Wearable Exoskeletons, Neuromusculoskeletal (NMS) Modeling, Surface Electromyography (sEMG) Decoding, Motor Intent Estimation, Real-Time Myoelectric Control.

Education

University of Verona, PhD in Intelligent Systems Engineering Oct 2025 – Present

- Doctoral research focused on wearable robotics, motor intent decoding, and assistive control.

University of Verona, MSc in Computer Engineering for Robotics and Smart Industry Oct 2022 – Jul 2025
(Class LM-32)

- Graduated with **110/110 cum laude**. Full Professional English proficiency.
- Master's Thesis: "*A real-time implementation of an upper-limb neuromusculoskeletal model for robotic assistance*" (Advisor: Prof. Andrea Calanca).

Università degli Studi di Sassari, BSc in Computer Engineering (Class L-08) Oct 2019 – Oct 2022

- Graduated with **107/110**.
- Bachelor's Thesis: "*Machine learning techniques for predicting neutron-induced nuclear reaction cross-sections*" (Advisor: Prof. Daniele Dell'Aquila).

Awards & Honors

Best Demo Award, IEEE/ASME AIM 2026 - Genoa, Italy Jul 2026

Workshop: *Hands on! Bringing upper-limb exoskeletons into the real world*

- Awarded for the demonstration: *A Torque-Controlled Semi-Active Shoulder Exoskeleton* (F. Pascucci, E. Dimo, M. Sedilesu, A. Calanca).

Research Experience

Research Fellow, Università degli Studi di Verona - DIMI - Verona, Italy Aug 2025 – Sep 2025

- Awarded research grant within the SHIELD project (RIR 2024 - Regione Veneto).
- Developed software/firmware modules for wearable robotic exoskeletons with real-time constraints and EMG decoding.

Research Collaborator, Università degli Studi di Verona - Altair Lab - Verona, Italy Apr 2025 – Sep 2025

- EMG-based exoskeleton control systems (Human-in-the-loop optimization).
- Development of adaptive assistive robotics pipelines.

Research Fellow, Università degli Studi di Verona - DIMI - Verona, Italy Jun 2025 – Jun 2025

- Awarded competitive research grant under the PR Veneto FSE+ 2021–2027 program for the project "ASSOLOIST: Myoelectric-Controlled Exoskeleton for Motor Disability Assistance".
- Produced communication deliverable videos and a bilingual public abstract (IT/EN) to enhance outreach and dissemination.
- Participated in public workshops showcasing exoskeleton systems and EMG-based control strategies.

Research Intern, Università degli Studi di Verona - Verona, Italy Nov 2024 – Jan 2025

- Studied NMS models for upper-limb exoskeletons and sEMG-based control (≥ 100 Hz real-time loops).

Research Intern, Università degli Studi di Sassari - Sardinia, Italy Jan 2022 – Oct 2022

- Developed ML regression models to predict nuclear reaction cross-sections (n,p) and (n,α).

Teaching Experience

Teaching Tutor - Robotics, Università degli Studi di Verona Oct 2026 – Present
MSc in Computer Engineering for Intelligent Systems

- Provided tutoring, guided exercises, and student support for the Robotics course.

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MSc in Computer Engineering for Intelligent Systems

- Provided tutoring, guided exercises, and student support for the Robotics course.

Teaching Tutor - Electronic Devices and Sensors, Università degli Studi di Verona Oct 2025 – Jul 2026
MSc in Computer Engineering for Intelligent Systems

- Student support, laboratory sessions, and supplementary teaching activities.

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Training & Advanced Schools

INCEPTION Winter School, Politecnico di Torino - Turin, Italy

Feb 2026

- *High-Density Surface Electromyography: hands-on training to record, analyze, and decompose* (Politecnico di Torino, Università di Brescia, LISiN; funded by ERC).

Exhibitions & Trade Fairs

Exhibitor, Green Logistics Expo 2026 — Fiera di Padova, Italy

Oct 2026

- Showcased assistive exoskeleton systems and research prototypes for logistics and industry applications.

Exhibitor, A&T – Automation & Testing — Fiera di Vicenza, Italy

Oct 2025

- Exhibited wearable robotic exoskeletons and smart assistive technologies for industrial and SME settings.

Entrepreneurial Experience

Team Member, Drivehia - 2nd place & “Green & Blue” mention at StartCup Sardegna;
PNI 2024

2023 – 2024

- Co-developed route-optimization models for road transport; managed team booth and investor pitch presentations at PNI 2024.

Technical Skills

- **Robotics & Biomechanics:** Control Theory (Motion, Force/Interaction, Multivariable), Human-Robot Interaction (HRI), Neuromusculoskeletal (NMS) Modeling (CEINMS, OpenSim).
- **Sensing & Signal Processing:** Sensor Interfacing, Conditioning & Data Acquisition (Kinematic, Dynamic, Biopotential & Environmental Sensors), Digital Signal Processing, Time-Frequency Feature Extraction, Denoising & Artifact Removal.
- **Embedded Systems & Firmware:** Bare-Metal Firmware Development (C/C++), Microcontroller & Embedded Architectures (STM32, Arduino, Raspberry, Nvidia Jetson), Standard Communication Buses (SPI, I2C, UART), Low-Latency Sensor-to-Actuator Pipelines.
- **Programming & Software Engineering:** Modern C++ (C++14/17/20), Python, MATLAB/Simulink, Robot Operating System (ROS/ROS2), Linux Environment.
- **Tools & Workflow:** Git, Docker, PlatformIO, LaTeX.

Languages

- English (Full Professional proficiency), Italian (Native).

Declarations

Aware of the criminal penalties provided for by Art. 76 of Italian Presidential Decree D.P.R. 445/2000 for false declarations, I hereby declare under my own responsibility that the information reported in this Curriculum Vitae is true and accurate. I authorize the processing of my personal data pursuant to Legislative Decree 196/2003 and GDPR (EU) 2016/679 for academic and selection purposes.