Andrea **Grillo**

EPFL Master's Student in Robotics

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Summary

As a dedicated Robotics student with a foundation in Computer Science, I am enthusiastic about merging my expertise in computer and electronics to specialize in **embedded systems** for **control** and **robotics**. I am driven by a desire to enhance my problem-solving abilities for complex challenges, while actively seeking opportunities to expand my knowledge and master new technologies and tools.

Education

EPFL - École Polytechnique Fédérale de Lausanne

Lausanne, SWITZERLAND

Master's Degree in Robotics — *Sept. 2023 - present*

- Relevant courses: Model Predictive Control, Embedded System Design, System Programming for SOCs, Distributed Algorithms.
- Teaching assistant for courses: Basics of Mobile Robotics, Basics of Robotics for Manipulation.
- Grade average: 5.83/6

POLITO - Politecnico di Torino

Torino, ITALY

Bachelor's Degree in Computer Engineering — *Aug. 2020 - Jul. 2023*

- Intraprendenti Project: excellence program for top-level students.
- Camplus Bernini: INPS fellowship for living in a College of Merit during my studies.
- Final grade: 110/110 cum laude

Professional Experience

Hydromea

Renens, SWITZERLAND

Internship - Underwater Optical Communication Engineer — *Feb. 2025 - present*

- Optical communication protocols implementation on microcontroller. Unit and integration test automation.
- Embedded systems, C, Python, Git, CI/CD, Docker.

BIOROB Laboratory

Lausane, SWITZERLAND

EPFL Semester Project — *Sept. 2024 - Jan.2025*

- Implementation of high frequecy, low latency data acquisition system for a robotic platform.
- ROS2, C++, RS485.

Automatic Control Laboratory - Predict Lab

Lausanne, SWITZERLAND

Research assistant and Semester Project — *Feb. 2024 - present*

- Distributed Model Predictive Control for miniature hovercrafts. Implementation of the software framework for the deployment of distributed MPC on small hovercraft aiming at multi-robot formation control. This work was accepted to *ICRA 2025*.
- ROS2, Optimization, C++, MPC.

Swiss Solar Boat

Lausanne, SWITZERLAND

EPFL Semester Project — *Sept. 2023 - Feb. 2024*

- Design of a framework for the software architecture of the new prototype boat.
- ROS2, CANBUS communication, Python/C++ programming, Docker containers.

Pic4Ser - Politecnico di Torino

Torino, ITALY

Student Internship — *Feb. 2023 - Jul. 2023*

- Design, project and realization of an obstacle-avoidance sensor systems for an existent robotic platform.
- STM32 microcontroller PCB design and programming, CANBUS communication.

Team ISAAC - Politecnico di Torino

Torino, ITALY

Team Leader — *Nov. 2020 - Jul. 2023*

- Leadership and management of a student team.
- Design and implementation of a biomimetic modular snake-like robot.
- Microcontroller programming, control systems, network management, software development management.

Openscuola Project - Politecnico di Torino

Torino, ITALY

Specialized Technician - Student Internship — *Oct. 2021 - Jul. 2023*

- Statal schools IT infrastructure and maintenance using recycled hardware and open-source software.
- https://linux.studenti.polito.it

Publications

2024

- *Stomberg, G., Schwan, R., Grillo, A., Jones, C.N. and Faulwasser, T.* - Cooperative distributed model predictive control for embedded systems: experiments with hovercraft formations.
  Accepted to *ICRA 2025*.
  Available at: `https://arxiv.org/abs/2409.13334v1`.

Languages

English, C1 - IELTS certificate: Overall Band Score 8.0

French, B2

Spanish, C1 - CELU certificate: Advanced Level - Mention of Excellence

Italian, Mother Tongue

Competences

Programming

- Excellent C/C++ for embedded systems and low-level peripheral interfacing.
- Proficient in Python, Java, MIPS/OpenRISC assembly.
- Experience in MATLAB for data analysis and simulation.
- Version control expertise with Git (GitHub/GitLab).

Robotics and Control Systems

- Proficient in ROS/ROS2 for embedded systems.
- Control systems: PID, loop-shaping, cascaded control, MPC, distributed DMPC.
- Experience in robotics hardware: microcontrollers, motor drivers, sensors, power systems.
- Robot design: sensor/actuator selection, transmission sizing, kinematic computation.

IT and Networking

- Expertise in GNU/Linux (Debian, Ubuntu) for both server and embedded environments.
- Proficient in virtualization using Docker.
- Experience in networking: VPNs (Wireguard), routing, firewall management.

Electronics and Embedded Systems

- Analog and digital circuit design: OpAmps, DC/DC converters, FPGA, ADC/DAC.
- Proficient in communication protocols: I2C, SPI, RS-485, CANBUS.
- PCB design for microcontroller systems (STM32).

Other Skills

- Strong manual skills for assembly and repairs (mechanical/electrical systems).
- Leadership and teamwork management (GitHub, Slack, Trello, Notion).