Carlo Bosio

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Who I am

Researcher interests: controls, cptimization, and learning methods for robot control and design automation

Education

UC Berkeley Expected 2027
Ph.D. in Robotics
Advisor: Mark W. Mueller

University of Pisa 2022
M.S. Robotics (ranked $1^{st}/248$)
Advisor: Mark Cutkosky (Stanford University)
Thesis: "Grasping Through Microspines: Analysis of a Three Finger Gripper for a Space Exploration Robot"

Publications

My research was published on *Science Robotics*, *IEEE RAL*, *IROS*, *Frontiers in Robotics and AI*.

For a full list of publications, check my Google Scholar page.

Bosio C., Mueller M. W. "Synthesizing Interpretable Control Policies through Large Language Model Guided Search," *American Control Conference*, 2025.

Bosio C., Tang J., Wang T. H., Mueller M. W., "Automated Layout and Control Co-Design of Robust Multi-UAV Transportation Systems," *IEEE Robotics and Automation Letters*, 2025.

Chen T. G., Newdick S., Di J., **Bosio C.**, Ongole N., Lapôtre M., Pavone M., Cutkosky M., "Locomotion as manipulation with ReachBot," *Science Robotics*, 2024.

Research Experience

Graduate Student - UC Berkeley 2022 – Ongoing
Berkeley AI Research Lab

- Research on Controls, UAVs, Design Automation, Large Language Models and Program Synthesis.
- Invited researcher at Tsinghua University (China).
- Teaching Assistant for undergraduate course "AE10 – Control of UAVs" (50 students). Tutor for Preliminary exam (1st year PhD students) in Controls.
- Mentored $\sim$ 10 undergraduate and masters student researchers.
- Cross-departmental collaboration with Prof. Alberto Sangiovanni Vincentelli's group.

Software Intern - Zoox Inc. Summer 2025
Prediction and Behavior ML Division

- Worked on estimating agent relevance in driving scenes for onboard compute prioritization.
- Set up large training pipelines using imitation and reinforcement learning.
- Enabled state-of-the-art driving performance processing an order of magnitude fewer agents.

Visiting Student Researcher - Stanford University 2022
Biomimetics and Dexterous Manipulation Lab

- Research fellowship supported by NASA.
- Worked on ReachBot, project focused on a new concept for a space exploration robot. Developed a model and a simulation based on a Monte-Carlo method for the performance evaluation of a microspine gripper.
- Experimentally validated probabilistic method on real hardware.

Research Fellow - EPFL E3 Scholar 2021
CREATE Lab - Supervisor: Josie Hughes Lausanne, CH

- Developed from scratch a flexible, fully 3D printed robotic hand. I took care of the design, the grasp planning and the control of the device.
- In parallel, I also contributed to the design optimization and optimal control of a swimming soft robot.
- Collaborated with interdisciplinary team of researchers.

ANA Avatar XPRIZE 2020 – 2021
Perceptual Robotics Laboratory - Supervisor: Antonio Frisoli Pisa, IT

- Led a student team developing an Avatar System to remotely interact with environment in real time.
- Developed a C library and a ROS package to digitally control the humanoid avatar's head motors.
- Simulation and control of a mecanum wheel-based omnidirectional platform.
- Accurate dynamics modelling, including joint friction analysis, of a robotic arm (Panda robot by Franka Emika) to improve control performance.

Honors and Awards

KTH RPL Summer School 2024 Selected as fully funded attendee for the KTH RPL Summer School in Stockholm, Sweden (acceptance rate: 3%).

Powley Fund Research Grant: Awarded 30k research funding grant.

Nova 111 Student List 2023: Selected as a highest potential Italian student from Nova Talent Network (acceptance rate: 3%).

EPFL Excellence in Engineering 2021: Awarded the highly competitive E3 Summer Research Fellowship from the EPFL School of Engineering (acceptance rate: 2.3%).

Fondazione Ing. Pirro Liguori Scholarship 2018/22 (First Award): The organization every year awards the two best University of Pisa engineering students with economic support.

Sant'Anna School of Advanced Studies Alumnus 2017/22: Awarded the prestigious Sant'Anna full scholarship (acceptance rate: 3%).

Skills

Programming Languages: C/C++, Python, Linux Shell, Matlab, R

Programming Frameworks/Libraries: ROS, Git, PyTorch, LaTeX

Spoken Languages: Italian (native), English (fluent, TOEFL iBT 111/120), French (fluent, DELF B2, EsaBac diploma), Chinese (basic)

Volunteering

ISSNAF (Italian Scientists and Scolars in North America Foundation): Organizig cultural events across the San Francisco Bay Area.

Last updated October 2, 2025.