Michele Antonazzi

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Highlights

- PhD Student on domain adaptation and privacy–preservation for Robotic Vision (Oct. 2022 – Sept. 2025)
- 3 conference publications (2 at IROS) and two journal articles in Robotics and Autonomous Systems and Expert Systems with Applications
- First author of 2 journal papers: one in minor revision at Journal of Field Robotics (Wiley) and the other in major revision at IEEE Transactions on Robotics
- Wide knowledge of deep learning–based architectures for computer vision tasks
- Extensive experience working on photorealistic robotic simulators and real robotic platforms
- Maintainer of an enhanced version of Gibson Environment with more than 150K downloads (code)
- Proficient in Python, PyTorch, ROS, and fluent in C++, CUDA C

Work experiences

June 2025 - Sep. 2025 **Research Visiting** IDSIA

- Description: Visiting research at IDSIA, Lugano, supervised by Prof. Alessandro Giusti.
- Working on self-supervised adaptation for vision in nano drones.

Mar. 2022 - Sep. 2022 **Research Fellow in ESSENCE H2020 Project** University of Milan

- Description: Working on ESSENCE, an H2020 project for remote monitoring, tele-assistance, and connection between professional and vulnerable users (children and seniors).
- Participation in a four–day test session with users in Jarandilla de La Vera (Spain) in May 2022.

Nov. 2018 - Dec. 2021 **Intern as research support at AISLab** University of Milan

- Description: Working on robotics at the Applied Intelligent Systems Laboratory (AISLab) and supporting the researchers in their activities.

May 2018 - July 2018 **Junior developer - University internship** Sics srl

- Description: Computer engineer and developer internship. The project concerned the development of an RTSP server using GStreamer: it creates a video stream by encoding OpenCV frames.

June 2014 – July 2014 **Computer technician - High-school internship** IBS SRL

- Activities: PC hardware and software maintenance, computer store sales, external support to companies.

Michele Antonazzi · **michele.antonazzi@unimi.it** · +39 3451155679 August 5th, 2025

Education

Oct. 2022 - Present **PhD Student in Computer Science** University of Milan

- Description: My research investigates domain adaptation techniques for Robotic Vision, specifically focused on enhancing the perception abilities of robots when distributed in cloud infrastructures with strong privacy requirements.
  - Supervisor: Prof. Nicola Basilico
  - Co–Supervisor: Dr. Matteo Luperto

Oct. 2018 – Dec. 2021 **Master's Degree in Computer Science** University of Milan

- Grade: 110/110 cum laude
- Thesis title: Robust door detection in autonomous mobile robots
  - Advisor: Prof. Nicola Basilico
  - Co-advisor: Dr. Matteo Luperto

Oct. 2015 – Sept. 2018 **Bachelor's Degree in Computer Science** University of Padua

- Grade: 110/110 cum laude
- Thesis: Implementation of an RTSP server for streaming OpenCV frames via GStreamer
  - Advisor: Prof. Francesco Ranzato

Sept. 2010 – June 2015 **Technical Institute High School Diploma** ITT Giacomo Chilesotti

- Course: Computer Science and Telecommunication. Grade: 94/100

Publications

Journals

[1] Samuel Yanes Luis, Nicola Basilico, Michele Antonazzi, Daniel Gutiarrez-Reina, and Sergio Toral Maran. "Variational model-based Deep Reinforcement Learning for Non-Homogeneous Patrolling aquatic environments with multiple unmanned surface vehicles". In: *Expert Systems with Applications* 270 (2025), p. 126483. ISSN: 0957-4174. DOI

[2] Matteo Luperto, Michele Antonazzi, Francesco Amigoni, and N. Alberto Borghese. "Robot exploration of indoor environments using incomplete and inaccurate prior knowledge". In: *Robotics and Autonomous Systems* 133 (2020), p. 103622. ISSN: 0921-8890. DOI

Conferences

[3] Michele Antonazzi, Matteo Luperto, N. Alberto Borghese, and Nicola Basilico. "R2SNet: Scalable Domain Adaptation for Object Detection in Cloud–Based Robotic Ecosystems via Proposal Refinement". In: *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2024, pp. 2676–2682. DOI

[4] Mauro Tellaroli, Matteo Luperto, Michele Antonazzi, and Nicola Basilico. "Frontier-Based Exploration for Multi-Robot Rendezvous in Communication-Restricted Unknown Environments". In: *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2024, pp. 5807–5812. DOI

[5] Michele Antonazzi, Matteo Luperto, Nicola Basilico, and N. Alberto Borghese. "Enhancing Door-Status Detection for Autonomous Mobile Robots During Environment-Specific Operational Use". In: *2023 European Conference on Mobile Robots (ECMR)*. 2023, pp. 1–8. DOI

Pre-prints

[6] Michele Antonazzi, Matteo Alberti, Alex Bassot, Matteo Luperto, and Nicola Basilico. *Privacy-Preserving Robotic Perception for Object Detection in Curious Cloud Robotics*. In major revision in IEEE Transactions on Robotics. 2024

[7] Michele Antonazzi, Matteo Luperto, N. Alberto Borghese, and Nicola Basilico. *Development and Adaptation of Robotic Vision in the Real-World: the Challenge of Door Detection*. In major revision at Journal of Field Robotics, Wiley. 2024. DOI

Presentations

Conferences

- Presentation of [3] at the International Conference on Intelligent Robots and Systems (IROS) in Abu Dhabi, United Arab Emirates, 2024
- Presentation of [5] at the European Conference on Mobile Robots (ECMR) in Coimbra, Portugal, 2023

Referee Services

Program Committee member:

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS) – 2023, 2025
- Annual AAAI Conference on Artificial Intelligence – 2023
- Workshop on Autonomous Robots and Multirobot Systems (ARMS) in the International Conference on Autonomous Agents and Multiagent Systems (AAMAS) – 2023, 2024

Reviewer activities:

- IEEE Robotics and Automation Magazine (RAM) – 2025
- Robotics and Autonomous Systems – 2024
- IEEE Robotics and Automation Letters (RA-L) – 2024
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) – From 2022 to 2025
- IEEE International Conference on Robotics and Automation (ICRA) – From 2023 to 2025
- European Conference on Artificial Intelligence (ECAI) – 2023
- International Conference on Social Robotics (ICSR) – 2022

Teaching

Advanced Intelligent Systems

- Guest lecturer for 10 hours in the course "Advanced Intelligent Systems" in the M.Sc. degree in Computer Science at the University of Milan. Academic years 2022/2023 and 2023/2024. Topic of the lectures: "Introduction to autonomous robots".

Awards

Participation to the Second RPL Summer School

KTH Stockholm

- I was selected for the second "Robotics Perception and Learning Summer School" in Stockholm, organized by the RPL division of KTH. The event aimed to promote international collaborations among the participants. (The participation was determined after a competitive selection with a final acceptance rate of about 11%.)

Certificate

Participation to SWERC 2019/2020 — University of Milan

- Winner of the university selection for the SWERC international programming competition. I participated to the international competition in Paris as a member of the second UNIMI representative team, called "La Statale Silver".

Certificate

Open-source projects

Gibson Environment — Open Source Project

- I extended *Gibson Environment*, a well–known photorealistic robotic simulator. My contributions involve:
  - new simulation modality without physical constraints to avoid robot's failures caused by the artifacts in the 3D environment meshes;
  - improved utilities for the assets management;
  - several bug fixes in the building procedures;
  - a continuous integration workflow to automatically build and publish Gibson on *PyPI*.

Source code

ROS Door Detector in CUDA — Open Source Project - Main contributor

- During my master's, I developed a ROS node for door detection following the approach in the paper "Robust door detection in unfamiliar environments by combining edge and corner features". I parallelized the approach implementing the filters of Canny and Harris for edge and corner detection using CUDA C.

Source code

Generic Dataset — Open Source Project - Main contributor

- This configurable framework automatically generates the code and the necessary classes to manage a dataset of any kind, using the metaprogramming paradigm. *Generic Dataset* also offers useful utility to manipulate NumPy's arrays, building a pipeline executable on CPU or GPU without modifying the code. It can be easily installed using *PyPI*.

Source code

Runtime Stub Generator — Open Source Project - Main contributor

- This utility automatically generates Python stub files at runtime to enhance the auto-complete capabilities of your favorite Python IDE. Stub files are dynamically generated by importing Python modules and examining them through Python's internals. This allows to consider also dynamically generated types. It is also available on *PyPI*.

Source code

Skills

Technological skills

- Python, ROS, PyTorch, C, C++, CUDA C, OpenGL ES, Protocol Buffer, gRPC, AspectJ, GStreamer, Qt, Robot Web Tools

Language skills

- Italian: native language, English: accommodation capacities B2, production capacities B2