Michele Antonazzi

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Highlights

- PhD Student in Computer Science at the University of Milan
- Author of a journal publication in *Robot and Autonomous System* (*DOI*)
- Research Fellow at the University of Milan, working on ESSENCE H2020 project
- Master's degree in Computer Science at University of Milan, 110/110 cum laude
- Intern as Research Assistant at the Applied Intelligent System Lab of UNIMI
- Research interest in Computer Vision applied to Robotics
- Proficient in Python, PyTorch, ROS (also Gazebo), Javascript and fluent in C++, CUDA C

Work experiences

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

- Description: Working on ESSENCE, an H2020 project. It aims at boosting the creation of a new model of home-based care that relies on stimulation, remote monitoring, tele-assistance, and connection between professional, fragile users (children and seniors), and their families. In the meanwhile, doing research activities on Robotics and Computer Vision with the AISLab (Laboratory of Applied Intelligent Systems) staff.
- Testing with users: participation in a four–days test session with users in Jarandilla de La Vera (Spain) in May 2022.
- PSC meeting: participation to the ESSENCE PSC meeting held in Milan with all partners.

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

- Description: Working on robotics at AISLab and supporting the researchers in their activities.
- Movecare testing: I participated as a volunteer in a Movecare (H2020 European Project) test session at Corian, a retirement home. My activities involve giving technical support to the installation of a robotic platform to assist elderly.

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

- Description: Computer engineer and developer internship. The project concerns 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.

Education

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

- Description: My research investigates Robotic Vision, namely the integration of Deep Learning-based vision modules into mobile robots. In particular, I'm focusing on mitigating the sim-to-real gap and developing new domain adaptation strategies.
  - 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
- Average grade: 29.3/30
- Thesis title: Robust door detection in autonomous mobile robots (*link*)
  - 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

Journal

- Matteo Luperto, Michele Antonazzi, Francesco Amigoni, N. Alberto Borghese, *"Robot exploration of indoor environments using incomplete and inaccurate prior knowledge"*, Robotics and Autonomous Systems, Volume 133, 2020

  DOI

Conference

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

  DOI

Pre-print

- Michele Antonazzi, Matteo Luperto, N. Alberto Borghese, Nicola Basilico *"Development and Adaptation of Robotic Vision in the Real-World: the Challenge of Door Detection"*.

  DOI

Referee Services

Program Committee member of the following conferences:

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

Reviewer for the following conferences:

- 2023 European Conference on Artificial Intelligence (ECAI)
- 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2023 IEEE International Conference on Robotics and Automation (ICRA)
- 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2022 International Conference on Social Robotics (ICSR)

Teaching

AA 2023/2024 – Advanced Intelligent Systems

- Ten hours talking about Autonomous Mobile Robotics in the Master course of Advanced Intelligent Systems.

AA 2022/2023 – Advanced Intelligent Systems

- Ten hours talking about Autonomous Mobile Robotics in the Master course of Advanced Intelligent Systems.

Awards

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

Third classified to OPS 2012/2013 ITT Giacomo Chilesotti

- My team reached the third place in the national Olympic of Problem Solving (OPS) 2012/2013 in Rome.

Third classified to Kangourou 2011/2012 ITT Giacomo Chilesotti

- My team reached the third place in the national mathematical context of Kangourou 2011/2012 in Mirabilandia Park (Ravenna).

Open-source projects

Gibson Environment Open Source Project

- In the context of my master's thesis, I contributed to *Gibson Environment*, an open-source robotic simulator for vision sim-to-real. My upgrades include adding a new simulation environment without physical constraints, improving the assets management (that includes environments dataset and robot models), improving the build procedure, and setting up a continuous integration workflow (CI) using Github Actions to automatically build and publish a compiled version of Gibson (available on *PyPI*) following the manylinux standard.

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

- Languages: Python, C, C++, Javascript, Java (also Android)
- Frameworks and libraries: PyTorch, Keras, CUDA C, ROS, OpenCV, CuPy, OpenGL ES, Protocol Buffer, gRPC, AspectJ, GStreamer, Qt, Robot Web Tools
- General skills: Git, continuous integration (GitHub actions), UML diagrams, design pattern

Language skills

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