Roberto **Bigazzi**

Ph.D in Computer Vision and Deep Learning

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Summary

I'm a Post-Doc Researcher at the University of Modena and Reggio Emilia, in the AImageLab research laboratory supervised by Professor Rita Cucchiara. The main topics of my research are Computer Vision and Deep Learning, in particular on robotic visual navigation.
I pursued my Ph.D. at AImageLab research laboratory after completing my Master's Degree in Computer Science and Engineering at the Polytechnic University of Milan, with Professor Marco Gribaudo. During my Ph.D. program, I spent a period as visiting student researcher at Stanford University in the Autonomous Systems Lab (ASL) directed by Professor Marco Pavone.

Knowledge and Technical Skills

Domains	Visual Navigation, Multimodal Learning, Natural Language Processing, Reinforcement Learning, Deep Learning
Programming	Python, Java, Javascript, C++, C#, C, MATLAB, SQL, Microcontroller Programming (Arduino)
Frameworks and Other	PyTorch, OpenCV, Numpy, Pandas, LaTeX, Scikit-learn, Tensorflow, Keras, ROS, Git, Android Programming, MySQL
Languages	Italian (Mothertongue), English (Proficient *TOEIC (C1), FCE (B2)*)

Education

University of Modena and Reggio Emilia — *Modena, Italy*

Post-Doc Researcher: Computer Vision and Deep Learning — *Mar. 2023 - present*

- Research on Visual Navigation and Multimodal Learning

University of Modena and Reggio Emilia — *Modena, Italy*

Doctor of Philosophy in Information and Communication Technologies: Computer Vision and Deep Learning — *Nov. 2019 - Mar. 2023*

- Multimedia Data Learning at AImagelab under the supervision of Prof. Rita Cucchiara

Stanford University — *Stanford, California, United States*

Visiting Student Researcher — *May 2022 - Aug. 2022*

- Research on Visual Navigation at Autonomous Systems Lab (ASL) under the supervision of Prof. Marco Pavone

Polytechnic University of Milan — *Milan, Italy*

Master of Science in Computer Science and Engineering — *Sep. 2017 - Oct. 2019*

- Final Grade: 108/110. Thesis with Prof. Marco Gribaudo: "Enhancing Spatial Navigation in Robot-Assisted Surgery: a case study"

Technische Universität Wien — *Vienna, Austria*

Erasmus+ Exchange Semester — *Oct. 2018 - Feb. 2019*

Polytechnic University of Milan — *Milan, Italy*

Bachelor of Science in Software Engineering — *Sep. 2014 - Sep. 2017*

- Final Grade: 99/110

Pubblications

2023 International Conference on Robotics and Automation (ICRA)

Embodied Agents for Efficient Exploration and Smart Scene Description

Roberto Bigazzi, Silvia Cascianelli, Lorenzo Baraldi, Marcella Cornia, Rita Cucchiara

2022 Robotics and Automation Letters (RA-L) + International Conference on Robotics and Automation (ICRA)

Focus on Impact: Indoor Exploration with Intrinsic Motivation

Roberto Bigazzi, Federico Landi, Silvia Cascianelli, Lorenzo Baraldi, Marcella Cornia, Rita Cucchiara

2022 26th International Conference on Pattern Recognition (ICPR)

Spot the Difference: A Novel Task for Embodied Agents in Changing Environments

Federico Landi, Roberto Bigazzi, Marcella Cornia, Silvia Cascianelli, Lorenzo Baraldi, Rita Cucchiara

2023 22st International Conference on Image Analysis and Processing (ICIAP)

Towards Explainable Embodied Navigation and Recounting

Samuele Poppi, Roberto Bigazzi, Niyati Rawal, Marcella Cornia, Silvia Cascianelli, Lorenzo Baraldi, Rita Cucchiara

2021 21st International Conference on Image Analysis and Processing (ICIAP)

Embodied Navigation at the Art Gallery

Roberto Bigazzi, Federico Landi, Silvia Cascianelli, Marcella Cornia, Lorenzo Baraldi, Rita Cucchiara

2021 19th International Conference on Computer Analysis of Images and Patterns (CAIP)

Out of the Box: Embodied Navigation in the Real World

Roberto Bigazzi, Federico Landi, Marcella Cornia, Silvia Cascianelli, Lorenzo Baraldi, Rita Cucchiara

2020 25th International Conference on Pattern Recognition (ICPR) (Oral Presentation)

Explore and Explain: Self-supervised Navigation and Recounting

Roberto Bigazzi, Federico Landi, Marcella Cornia, Silvia Cascianelli, Lorenzo Baraldi, Rita Cucchiara

Under Review

Indoor Semantic Region Mapping: Language-grounded Visual Recognition for Embodied Navigation

Roberto Bigazzi, Shreyas Kousik, Lorenzo Baraldi, Rita Cucchiara, Marco Pavone

Under Review

AIGeN: An Adversarial Approach for Instruction Generation in Vision-and-Language Navigation

Niyati Rawal, Roberto Bigazzi, Lorenzo Baraldi, Rita Cucchiara

Under Review

UNMuTe: Unifying Navigation and Multimodal Dialogue-like Text Generation

Niyati Rawal, Roberto Bigazzi, Lorenzo Baraldi, Rita Cucchiara

Experience

AImageLab - University of Modena and Reggio Emilia *Modena, Italy*

Research Fellow *Nov. 2019 - present*

Research during Doctorate at AImageLab.

Prometeia *Bologna, Italy*

Lecturer *Nov. 2021*

Python and Machine Learning course for Banco BPM

IFOA Modena / Bologna *Modena / Bologna, Italy*

Lecturer *Jan. 2021 - Apr. 2021*

“Deep Learning, Artificial Intelligence e Neurolinguistic Processing” and “Data Analysis and Data Visualization” courses.

Cyber-Physical Systems Group - Technische Universität Wien *Vienna, Austria*

Project Developer *Oct. 2018 - Jan. 2019*

Project performed on the creation of a vertical farming system during the course of Internet of Things of the Professor Ezio Bartocci at TU Wien.

Teaching Activities

2020-23 **Teaching Assistant**, Computer Architectures
2021-22 **Lecturer and Project Tutor**, AI for Automotive
2020-21 **Project Tutor**, Neural Network Computing, AI and Machine Learning for Automotive
2019-20 **Project Tutor**, Computer Vision and Cognitive Systems

Program Committees

Peer Reviewer, IEEE Robotics and Automation Letters (RA-L)
Peer Reviewer, IEEE Geoscience and Remote Sensing Letters (GRSL)
Peer Reviewer, IEEE Pattern Recognition Letters (PRL)
Peer Reviewer, Transactions on Multimedia Computing Communications and Applications (TOMM)
Peer Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
Peer Reviewer, IEEE International Conference on Robotics and Automation (ICRA)
Peer Reviewer, IAPR International Conference on Pattern Recognition (ICPR)
Peer Reviewer, ACM International Conference on Multimedia

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this document and application for recruiting purposes.