

# Roberto Bigazzi

Ph.D in Computer Vision and Deep Learning

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## Summary

I am a machine learning engineer and data scientist at Ferrari. I was a postdoctoral researcher at the University of Modena and Reggio Emilia, working on Computer Vision and Deep Learning for Embodied AI. I completed my Ph.D. at AlmageLab supervised by Professor Rita Cucchiara. During my Master's, I studied at the Polytechnic University of Milan. I also spent a period as a visiting student researcher at Stanford University's Autonomous Systems Lab under Professor Marco Pavone.

## Knowledge and Technical Skills

**Topics** Visual Navigation, Multimodal Learning, Natural Language Processing, Reinforcement Learning, Deep Learning  
**Programming** Python, Java, Javascript, C++, C#, C, MATLAB, SQL, Microcontroller Programming (Arduino)  
**Languages** Italian (Mother tongue), English (Proficient TOEIC (C1), FCE (B2))

## Education

### Ph.D. @ University of Modena and Reggio Emilia

Doctorate in Information and Communication Technologies under the supervision of Prof. Rita Cucchiara

Modena, Italy  
Nov. 2019 - Mar. 2023

### Visiting Student Researcher @ Stanford University

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

Stanford, California, USA  
May 2022 - Aug. 2022

### Erasmus+ Student @ Technische Universität Wien

Erasmus+ Exchange Semester

Vienna, Austria  
Oct. 2018 - Feb. 2019

### Bachelor of Science and Master of Science @ Polytechnic University of Milan

M.S. in Computer Science and Engineering (Thesis with Prof. Marco Gribaudo)

Milan, Italy  
Sep. 2014 - Oct. 2019

## Experience

### Machine Learning Engineer and Data Scientist @ Ferrari SpA

Computer Vision and Deep Learning Research: Visual Navigation and Multimodal Learning for Embodied Agents

Maranello (MO), Italy  
Mar. 2023 - present

### Postdoctoral Research Fellow @ AlmageLab - University of Modena and Reggio Emilia

Computer Vision and Deep Learning Research: Visual Navigation and Multimodal Learning for Embodied Agents

Modena, Italy  
Mar. 2023 - present

### Research Fellow @ AlmageLab - University of Modena and Reggio Emilia

Research on Embodied AI during Doctorate at AlmageLab

Modena, Italy  
Nov. 2019 - Mar. 2023

### Research Fellow @ ASL - Stanford University

Research on Visual Navigation at Autonomous Systems Lab

Stanford, California, United States  
Jun. 2022 - Aug. 2022

### Lecturer @ Nuova Didactica, Prometeia, and IFOA

"Deep Learning Application" course

Modena / Bologna, Italy  
Jan. 2021 - Apr. 2024

## Main Publications

2024 *Advances in Neural Information Processing Systems (NeurIPS)*

### Personalized Instance-based Navigation Toward User-Specific Objects in Realistic Environments

2024 *IEEE International Conference on Robotics and Automation (ICRA)* (Collaboration with Stanford University and Georgia Tech)

### Mapping High-level Semantic Regions in Indoor Environments without Object Recognition

2024 *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*

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

2023 *IEEE International Conference on Robotics and Automation (ICRA)*

### Embodied Agents for Efficient Exploration and Smart Scene Description

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

### Focus on Impact: Indoor Exploration with Intrinsic Motivation

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

### Explore and Explain: Self-supervised Navigation and Recounting

2023 *22st International Conference on Image Analysis and Processing (ICIAP)* (Honorable Mention for ICIAP Best Paper Award)

### Towards Explainable Embodied Navigation and Recounting

## Program Committees

**Outstanding Reviewer Award:** ECCV 2024. **Evaluator,** ELLIS Ph.D. Program.

**Peer Reviewer:** *Conferences* - ICRA, IROS, ECCV, WACV, CVPRW, ICPR, ACMMM; *Journals* - RA-L, GRSL, PRL, TOMM.

## Teaching Activities

**Teaching Assistant:** "Computer Architectures", "AI for Automotive", and "Computer Vision and Cognitive Systems" courses.

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