

Matilde Antonj

Post Doc - Fellow in Cognitive Robotics

Human-Robot Interaction

Modelling Human Perception & Action

Cognitive Robotics

Education

November, 2021 - June, 2025

University of Genoa & Italian Institute of Technology

PhD program in Bioengineering and Robotics

Final evaluation: excellent cum laude and international label for the PhD.

PhD Thesis: "Investigating and modelling human motor and perceptual mechanisms with application in rehabilitation through human-robot interaction".

Python and MATLAB were used to realize the experimental setups and run the data analysis, while C++ was utilized to characterize the behavior of the humanoid robot iCub.

This work contributed to the ERC funded project WHISPER.

September, 2019 - October, 2021

University of Genoa

Master's Degree in Bioengineering - Neuroengineering and BIO-ICT

Graduation Mark: 110/110 cum laude and recommendation for publication.

Experimental Thesis: "The Study of Perceptual and Motor Adaptation during Human-Robot Interaction", Italian Institute of Technology, Genoa.

September, 2016 - July, 2019

University of Genoa

Bachelor's Degree in Biomedical Engineering

Graduation Mark: 110/110 cum laude.

Experimental Thesis: "Study of Shared Perception during Interaction", Italian Institute of Technology, Genoa.

This pilot study gave a contribution to the following publication: Mazzola, Carlo, et al. "Interacting with a Social Robot Affects Visual Perception of Space." Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction. 2020.

September, 2011 - July, 2016

Scientific High School Martin Luther King

Student

Final mark: 95/100

Work Experience

June, 2025 - present

Italian Institute of Technology

Post Doc - Fellow

Investigating human manipulation, aimed at the development of cognitive architectures in the framework of the project Future Artificial Intelligence Research (FAIR).

March, 2020 - March, 2025

MathWorks

MATLAB Student Ambassador at the University of Genoa

Holding seminars, aimed at teaching students MATLAB and Simulink in different fields of applications (e.g., Image Processing, Signal Processing, Machine Learning), and promoting the tools released by MathWorks.

September, 2023 - January, 2024

University of Genoa

Teaching Assistant in the Course Biomedical Robotics

Holding practical lectures for Master's students in Robotics: organization of lab activities with Touch X haptic device, related to the application of force fields and reaching task.

September, 2022 - July, 2025

University of Genoa

Tutor in Informatics and Geometry

Teaching Informatics and Geometry at university, to support students in passing the exams.

July, 2017

Marconistraat 40, 1704 RG Heerhugowaard, Holland

Internship in Futura Composites B.V.

Learning the construction process of a magnetic resonance, exploring the different sectors of the firm and using a 3D printer to create assembly components.

Award

First place in the **High Tech Entrepreneurship Hackathon**

Italian Institute of Technology and **Université Côte d'Azur** (February - March, 2025)

Project: myCube, device for manipulation exploration in patients with motor disabilities.

Languages

Italian

English

German

Language Skills

February, 2022 - present

Autodidact in German

October, 2019 - May, 2020

Attendance at Cambridge CPE course

January, 2019

Confirmed English grade C1 by CLAT (Athenaeum Linguistic Centre) certificate

December, 2015

Cambridge CAE certificate

2016

Study trip in Priors Marston (UK)

2014

Study trip in Dublin (IE)

2013

Study trip in Cambridge (UK)

2012

Study trip in Aldenham (UK)

IT Skills

- Python, MATLAB, C++
- Yarp, ROS
- AutoCAD
- Word, Excel, PowerPoint

University Projects

- Modelling the onset of macular oedema in MATLAB
- Design and development of a wearable device for postural behavior control
- Facial expression recognition in MATLAB

Experience Abroad

July-October, 2024

Visiting Period, Motion Analysis Laboratory, Harvard Medical School at Spaulding Rehabilitation Hospital, Boston

Developing an interactive solution with the humanoid robot NAO for home-based rehabilitation in children with cerebral palsy. The system was realized in Python

November, 2023

Visiting Period, Comenius University, Bratislava

Dissemination of results obtained in the ERC funded project wHiSPER and assessment of possible applications in the Horizon Europe project TERAIS

IT Certificates

December, 2023

Stateflow Onramp
MathWorks

March, 2023

Machine Learning Onramp
MathWorks

January, 2023

Signal Processing Onramp
MathWorks

July, 2022

Machine Learning Crash Course
University of Genoa

February, 2021

Image Processing Onramp
MathWorks

November, 2020

Simulink Onramp
MathWorks

May, 2020

MATLAB Fundamentals
MathWorks

March, 2020

MATLAB Onramp
MathWorks

Interests

December, 2015

Driving licence B

February, 2022 - present

Associate in the charity Rotaract
Covering the role of Treasurer (2022 - 2023) and Secretary (2023 - 2024).

2018 - present

Associate in IANUA Students and Alumni (ISA)

2013 - 2016

Awards in Classical Ballet

Three victories in "Variazioni", National Ballet Competition, either in solo or group performances, and one in the selection for the Classical Ballet Traineeship at Carlo Felice Theatre, Genoa, Italy.

Presentations

International Conference

March, 2023

Poster at 18th Annual ACM/IEEE International Conference on Human Robot Interaction, Stockholm, Sweden

"A Controllable and Repeatable Method to Study Perceptual and Motor Adaptation in Human-Robot Interaction"

May, 2025

Poster at 19th IEEE/RAS-EMBS International Conference on Rehabilitation Robotics (ICORR 2025), Chicago, IL, USA

Implementing and Testing the Novel REHAB-PAL System on Healthy Population: Towards Rehabilitation Engagement at Home with a Socially Assistive Robot for Pediatric Adherence"

Schools

December, 2022

Poster at HRI Winter School on Embodied AI, Ghent, Belgium

"Modelling Perceptual and Motor Adaptive Mechanisms during Human-Robot Interaction"

July, 2022

Poster at 8th International Summer School of Neuroengineering, Genoa, Italy

"Modelling Perceptual and Motor Adaptive Mechanisms during Human-Robot Interaction"

National Conference

October, 2021

Poster at 3rd Italian Conference in Robotics and Intelligent Machines (I-RIM), Rome, Italy

"A Pilot Study Towards the Implementation of Perceptual and Motor Adaptation in Robots"

Seminars

March, 2020 - present

University of Genoa, Italy

Monthly Seminars aimed at teaching MATLAB and Simulink

Invited Talk

July, 2022 and November, 2023

Institute of Higher Education at the University of Genoa, Italy

"My Personal Experience at the Institute of Higher Education IANUA"

Workshop

October, 2023

Selected in FORGING - Early co-creation workshop on Industry 5.0 novel technologies at the European Commission, Brussels, Belgium

Extracurricular Diplomas

July, 2021 - July, 2023

Institute of Higher Education at the University of Genoa

Master in Change Management

Graduation Mark: 110/110 cum laude.

Experimental Thesis: "Experimental Activities Aimed at the Investigation of Perceptual and Motor Adaptive Mechanisms during Human-Robot Interaction", Italian Institute of Technology, Genoa.

November, 2021

University of Genoa

State Examination in Engineering

November, 2019 - September, 2021

Institute of Higher Education at the University of Genoa

Master's IANUA Extracurricular Program

Cyber Security and Internet of Things, Interaction Technologies and Neuroengineering, Sustainable Project, Business Prospects and Challenges, Rhetoric, Sustainable Development, Digital Humanities, Intellectual Property, Human-centered Artificial Intelligence, Scientific Information.

November, 2017 - September, 2019

Institute of Higher Education at the University of Genoa

Bachelor's IANUA Extracurricular Program

Efficient Communication, Decision Making, Innovation Management, Economic Management and Business Plan, Interplanetary Missions, Nanotechnology and Nanomaterials, Quantum Elaboration of Information, Logic, Law for Contracts and Enterprises, Visual Culture, Food Industry between Innovation and Legislative Aspects.

November, 2016 - September, 2017

Institute of Higher Education at the University of Genoa

First-year students' ISICT Extracurricular Program

Introduction to Efficient Communication, Business Innovation and Creativity, Introduction to Text Writing, Theory of Games.

Publications

- Antonj, M., Zonca, J., Rea, F., & Sciutti, A. (2023, March). A Controllable and Repeatable Method to Study Perceptual and Motor Adaptation in Human-Robot Interaction. In Companion of the 2023 ACM/IEEE International Conference on Human-Robot Interaction (pp. 188-192).
- Antonj, M., Zonca, J., Lastrico, L., Casadio, M., & Sciutti, A.. (2021, October 10). A pilot study towards the implementation of perceptual and motor adaptation in robots. 3rd Italian Conference in Robotics and Intelligent Machines (I-RIM). <https://doi.org/10.5281/zenodo.5900619>
- Antonj, M., Corniani, G., Piela, K., Eusebi, L., Casadio, M., Sciutti, A., Bonato P. (2025). Implementing and Testing the Novel REHAB-PAL System on Healthy Population: Towards Rehabilitation Engagement at Home with a Socially Assistive Robot for Pediatric Adherence. In 2025 International Conference on Rehabilitation Robotics (ICORR). IEEE.
- Antonj, M., Zonca, J., Rea, F., Sciutti, A. (2025). How does the interaction with another agent shape the way we estimate interval timing? (submitted).
- Lúčny, A., Antonj, M., Mazzola, C., Hornáčková, H., Farkaš, I. (2025). Generating and Customizing Robotic Arm Trajectories using Neural Networks. In the 34th International Conference on Artificial Neural Networks (accepted, in press).
- Lúčny, A., Antonj, M., Mazzola, C., Hornáčková, H., Farić, A., Malinovská, K., Vavrečka, M., Farkaš, I. (2025). Examining the legibility of humanoid robot arm movements in a pointing task. In the 17th International Conference on Social Robotics (accepted, in press).