

GRETA VAZZOLER

DIME – Department of Mechanical, Energetic, Management, and Transport Engineering, University of Genova, Via all’Opera Pia 15, 16145 • GENOVA • ITALY

IIM – Institute of Mechanical Intelligence, Scuola Superiore Sant’Anna, Via Alamanni 13B, 56010 • PISA • ITALY

CURRENT POSITION: PhD Student

ACADEMICS

2021 – PRESENT	<u>University of Genova & Scuola Superiore Sant’Anna</u> Ph.D. IMEG – Doctorate in Mechanical Engineering, Energy, and Management, curriculum Mechanics, Measurements and Materials, cycle XXXII , on Design Methods and Optimization Tools for the Development of Upper Limbs Exoskeletons. <i>Visiting Graduate Researcher at University of California Los Angeles (UCLA), Mechanical and Aerospace Engineering, Flexible Research Group, for research activities in the area of compliant medical devices (September 25, 2023, to March 24, 2024).</i>	Genova & Pisa, Italy Los Angeles, US
2021 – 2022	<u>IANUA, Scuola Superiore of the University of Genova</u> Master II level in Change Management – curriculum Sustainability Sciences and Technologies (110/110) . Thesis title: “Eco-Programming of Industrial Robots for Sustainable Manufacturing”.	Genova, Italy
2018 – 2020	<u>University of Genova</u> Master's degree in Mechanical Engineering – Design and Production (110/110 with honors and dignity of print) . Thesis title: “Preliminary Design and Virtual Prototyping of an Exoskeleton for Upper Limbs”. MASTER THESIS AWARD 2021 – Special Mention, ADM – National Association of Industrial Engineering Design and Methods.	Genova, Italy
2015 – 2018	<u>University of Genova</u> Bachelor's degree in Mechanical Engineering (110/110) . Thesis title: “Design of the Elastic Element Rear End of the Mantis Mobile Robot”.	Genova, Italy

OTHER TITLES

Jun. 2021	<u>University of Genova</u> Professional Qualification to Practice as an Engineer.	
2018 – 2020	<u>IANUA, Scuola Superiore of the University of Genova</u> <i>Course of excellence: License Diploma, master level, curriculum Sustainability Science and Technology.</i>	
May 2019	<u>University of Genova</u> <i>Training experience: Certificate with successful final examination “Module C” of the Training Course for “Prevention and Protection Service Managers” integral part of the “Environmental and Occupational Safety and Transversal Skills Course”.</i>	
2016 – 2018	<u>IANUA, Scuola Superiore of the University of Genova</u> <i>Course of excellence: License Diploma, first level, curriculum Sustainability Science and Technology.</i>	

SHOLARSHIP AWARDS

Nov. 2021 – PRESENT	Scholarship holder on competitive call for the Ph.D. IMEG – Doctorate in Mechanical Engineering, Energy, and Management, curriculum Mechanics, Measurements and Materials, cycle XXXII , on Design Methods and Optimization Tools for the Development of Upper Limbs Exoskeletons at the University of Genova & Institute of Mechanical Intelligence of the Scuola Superiore Sant’Anna, Pisa, Italy.
Feb. – Oct. 2021	Scholarship holder on competitive call for Postgraduate Research Activities on Exoskeletal Systems for Rehabilitation Purposes at the PercRo Perceptual Robotics Laboratory of the Institute of Mechanical Intelligence of the Scuola Superiore Sant’Anna, Pisa, Italy.
Sept. – Dec. 2019	Scholarship holder on competitive call for the European Union Program, Erasmus+ Mobility for the purpose of study at the University of Edinburgh, United Kingdom.

RESEARCH ACTIVITIES

Publications

- **G. Vazzoler**, C. Camardella, M. Gabardi, S. Marcheschi, M. Solazzi, G. Berselli, A. Frisoli, “Evaluating Efficacy of Continuous Assistance Control during Orientation Tasks with an Active Wrist Exoskeleton”, *21st International Conference on Advanced Robotics (ICAR 2023)*, (**accepted**).
- M. Gallerani, **G. Vazzoler**, G. De Novi, M. P. Ottensmeyer, R. Razzoli, G. Berselli, “Integrated Design and Prototyping of a Robotic Eye System for Ocular and Craniofacial Trauma Simulators”, *International Journal on Interactive Design and Manufacturing*, 2023 (**Q2 Journal Article**, [doi: 10.1007/s12008-023-01364-y](https://doi.org/10.1007/s12008-023-01364-y)).
- **G. Vazzoler**, G. Berselli, A. Frisoli, “A Concept for a Gravity-Balanced Upper-Limb Exoskeleton”, *4th Italian Conference for Robotics and Intelligent Machines (I-RIM 2022)* (**BEST PAPER AWARD, finalist**), [doi: 10.1007/978-3-031-15928-2_1](https://doi.org/10.1007/978-3-031-15928-2_1).
- F. Merlo, **G. Vazzoler**, G. Berselli, “A Computer-Aided Tool for the Energy Optimization of Industrial Robots in Manufacturing Applications”, *International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2022)* (**In book: Advances on Mechanics, Design Engineering and Manufacturing IV**), 2023, [doi: 10.1007/978-3-031-15928-2_1](https://doi.org/10.1007/978-3-031-15928-2_1).
- F. Merlo, **G. Vazzoler**, G. Berselli, “Eco-Programming of Industrial Robots for Sustainable Manufacturing via Dynamic Time Scaling of Trajectories”, *Robotics and Computer-Integrated Manufacturing*, 2023 (**Q1 Journal Article**), [doi: 10.1016/j.rcim.2022.102420](https://doi.org/10.1016/j.rcim.2022.102420).
- F. Merlo, **G. Vazzoler**, G. Berselli, “Eco-Programming of Industrial Robots for Sustainable Manufacturing”, *31st International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2022)*, **fast track to RCIM journal (BEST PAPER AWARD)**.
- **G. Vazzoler**, P. Bilancia, M. Fontana, A. Frisoli, G. Berselli, “Analysis and Preliminary Design of a Passive Upper Limb Exoskeleton”, *IEEE Transactions on Medical Robotics and Bionics*, 2022 (**Special Section entitled on 20th International Conference on Advanced Robotics - ICAR2021**) (**Journal Article**), [doi: 10.1109/TMRB.2022.3186903](https://doi.org/10.1109/TMRB.2022.3186903).
- **G. Vazzoler**, P. Bilancia, M. Fontana, A. Frisoli, G. Berselli, “Preliminary Design and Virtual Prototyping of an Upper Limb Exoskeleton”, *20th International Conference on Advanced Robotics (ICAR 2021)*, [doi: 10.1109/ICAR53236.2021.9659373](https://doi.org/10.1109/ICAR53236.2021.9659373).

Seminars, Scientific Meetings and Workshops

- *SPS ITALIA FAIR, Smart production solutions*, Parma, 23-25 May 2023.
- *Roundtable, Competence Center Start 4.0*, Genova, 13 April 2023.
- *Kick-off Meeting Fit4MedRob – Fit for Medical Robotics*. EU Project (MUR, PNRR), Tecnopolo Bologna CNR, Via Piero Gobetti 101, 2 March 2023.
- *Launch Event: Paving the way towards the next generation of R&I excellence in AI, Data and Robotics*, Online, Mon, 17 Oct. 2022.
- *Kick-off Meeting IntelliMan – AI-Powered Manipulation System for Advanced Robotic Service, Manufacturing and Prosthetics*. EU Horizon Europe research and innovation program, Sala dei Poeti, Palazzo Hercolani, Bologna, 12-13 Sept. 2022.
- *Volunteer for a non-clinical experimental research study*. Project: EUROBENCH: European Robotic framework for bipedal locomotion benchmarking – Validation experiments. Promoter: European project

EUROBENCH, ID: 779963. Responsible: Dr. Diego Torricelli. Hospital Los Madroños. M-501, Km 17, 900, 28690 Brunete, Madrid, 04 May 2022 – 11 May 2022.

- *Abstract submission* (ACCEPTED). **G. Vazzoler**, P. Bilancia, G. Berselli, M. Fontana, A. Frisoli, “Preliminary Analysis and Design of a Passive Upper Limb Exoskeleton”, 4th International Workshop on Human-Friendly Robotics, Bologna, Italy, 28-29 Oct. 2021.

Memberships

ASME – The American Society of Mechanical Engineers • IEEE – Institute of Electrical and Electronics Engineers.

Chair/co-Chair in international conferences

SMASIS 2023 – ASME’s Premier Conference on Smart Materials, Adaptive Structures, and Intelligent Systems, Austin, Texas, USA, 10-13 Sept. 2023.

Reviewer for international journals

ASME – Journal of Mechanical Design, ISSN: 1050-0472 • IEEE/ASME – Transaction on Mechatronics, ISSN: 1083-4435 • IEEE – Robotics and Automation Magazine, ISSN: 1070-9932 • IEEE – Transactions on Haptics, ISSN: 19391412 • Elsevier – International Journal of Mechanical Sciences, ISSN: 207403 • Elsevier – Mechanism and Machine Theory, ISSN: 0094-114X • Springer International Journal on Interactive Design and Manufacturing, ISSN: 19552513 • Springer, Journal of the Brazilian Society of Mechanical Sciences and Engineering, ISSN: 16785878.

Reviewer for international conferences

ASME – SMASIS, Conference on Smart Materials, Adaptive Structures, and Intelligent Systems • IEEE – ICAR, International Conference on Advanced Robotics • IEEE – ICORR, International Conference on Rehabilitation Robotic • IEEE – ICRA, International Conference on Robotics and Automation • IEEE – RoboSoft, International Conference on Soft Robotics • IEEE – WHC, World Haptics Conference • JCM, International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing.

Attended Courses (PhD Program)

- *HumAN, IFRoMM International Summer School on Human-Centred Robotics*, Ancona, DIISM, Politechnic University of Marche, Italy, June 26-30, 2023.
- *Advanced kinematics for robotics and human machines interfaces*, Prof. Massimiliano Solazzi, Institute of Mechanical Intelligence, Scuola Superiore Sant’Anna, Pisa, Italy, July 2022 – Dec. 2022.
- *School of Neuroengineering Massimo Grattarola*, DIBRIS, University of Genova, Italy, 18-22 July 2022 (Poster presentation, Best Project Award (Group project)).
- *3D printed materials and their functional properties*, Prof. Fabrizio Barberis, DIME, University of Genova, Italy, 15-16-17 Jun. 2022.
- *Crowdfunding for financing new ventures*, Prof. Stefania Testa, DIME, University of Genova, Italy, 18-25 May 2022.
- *Introduction to space exploration*, Franco Malerba, Online, Jan. – March 2022.
- *Multi-limbed Manipulation*, Prof. Mark Cutkosky, Stanford University, BioRobotic Institute, Scuola Superiore Sant’Anna, Pisa, Italy, Nov. 2021 – Dic. 2021.

NOTABLE ACADEMIC PROJECTS

2023 – 2026 (ONGOING)	<u>University of Genova</u> EU Project SMERF: Preparing companies for a greener future. Budget: 2.49 m€.
2022 – 2026 (ONGOING)	<u>University of Genova</u> EU Project IntelliMan: AI-Powered Manipulation System for Advanced Robotic Service, Manufacturing and Prosthetics. Budget: 4.5 m€.
2022 – 2026 (ONGOING)	<u>University of Genova</u> EU Project Fit4MedRob: Fit for Medical Robotics (MUR (PNRR)). Budget: 1.8 m€.
2020 – 2023	<u>Scuola Superiore Sant’Anna</u>

National research project RoboGym: Robotic Gym for shoulder and upper limb rehabilitation. Budget: 350 000 €.

PATENTS

- **Esoscheletro robotico di polso**, deposit: 13/10/2023; inventors: G. Berselli, A. Frisoli, M. Gabardi, M. Solazzi, G. Vazzoler.
- **Arto Protesico Superiore Motorizzato Avente una Configurazione Costruttiva Ottimizzata**, deposit: 27/09/2023; inventors: G. Berselli, M. Baggetta, **G. Vazzoler**, G. Palli, C. Melchiorri.

ACTIVITIES AT UNIVERSITY LEVEL

University of Genova

Teaching support from 2021 (Courses of Prof. Giovanni Berselli)

- **Assistant Instructor** (*Master's Degree Course in Mechanical Engineering – Design and Production (Cod. 9269, class LM-33)*): Design of Automatic Machinery and Robots (Cod. 86927) (Italian) • Design of Automatic Machinery and Robots (Cod. 98960) (English).
- **Member of the examination board** (*Bachelor's Degree Course in Mechanical Engineering (Cod. 8720, class L-9)*; *Master's Degree Course in Mechanical Engineering – Design and Production (Cod. 9269, class LM-33)*): Industrial Technical Design (Cod. 56657) (Italian) • Design of Automatic Machinery and Robots (Cod. 86927) (Italian) • Design of Automatic Machinery and Robots (Cod. 98960) (English).
- **Supervisor** of Bachelor's and Master's students.

OTHER ACTIVITIES

2018 – 2019 University of Genova

Part-time collaboration activities (secretary work).

2012 – 2020 Personal job/Hobby

Study aid in Math/ Physics/English for elementary/high school students (family and friends) • Work aid as a commercial agent (dad's job).

LANGUAGES CERTIFICATES

Feb. 2023 Duolingo English Test, 120/160 (EU level **C1/C2**)

Dec. 2019 Erasmus+ OLS

Diploma of English as a foreign language (EU level **C1**).

Jun. 2014 Cambridge English Language Assessment, University of Cambridge
First Certificate in English (EU level **B2**).

TECHNICAL SKILLS

Softwares *MATLAB • PTC Creo • ANSYS Mechanical APDL/Workbench • MBD RecurDyn • Windows Office Package • Adobe Illustrator • LaTeX.*

REFERENCES

- **Prof. Giovanni Berselli**
Relationship: Ph.D. Tutor • Master Second Level Supervisor • Master's Thesis Supervisor • Bachelor's Thesis Co-Supervisor
- **Prof. Antonio Frisoli**
Relationship: Ph.D. Tutor

Genova, Italy, 06/12/2023