FrancescoWanderlingh

phd robotics engineering, musician, environmental educator

contact

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languages
italian mother tongue,
english fluency,
spanish and polish
beginner

citations
Scopus *h*-index: 8
Scholar *h*-index: 9
Scholar *i10*-index: 8

programming
♦ C++, QML, Java, Python
JavaScript, MATLAB
PHP, CSS3 & HTML5, LaTeX
Assembly, PSpice
Comau PDL2
frameworks
Android SDK (Java)
ROS, ROS2 (C++)
Allegro (C++)
QT + QML

work experience

2022-present	**Research Fellow (RTDa) in Marine Robotics**	University of Genova, Italy

Cooperative Marine Robotics for underwater monitoring and inspection
Research and development of autonomous marine multi-robot systems that substantially reduce maintenance costs and guarantee a safer working environment. Dynamic vehicle modeling and navigation of marine vehicles and experimental data acquisition techniques for marine robots within the framework of environmental protection activities supported by the PON RTDa funding.

Teaching Activities:
2023-24: Control Systems Engineering (6CFU - Master's Degree Course)
2022-23: Control Systems Engineering (6CFU - Master's Degree Course)

2021-2022	**Researcher in Marine Robotics**	University of Genova, Italy

Hardware/Software Development for Marine Vehicles Systems
Development of full stack control systems for surface and underwater vehicles: hardware design of on-board electronic control units for sensor acquisition, data processing and drive control; software implementation and testing of kinematics and dynamics control systems using ROS2 middle-ware with QT user interface. Field experiments and integration campaigns carried within the *EUMR* European project.

2019-2020	**Professor, High School**	Liceo Scientifico "Gianelli", Chiavari, Italy

Professor of Computer Science
Lecturing and conducting seminars for high-school students in the area of computer science, namely: hardware architectures, operating systems, networking, productivity software, algorithms, programming languages and software licensing.

2018	**Teaching Assistant, University**	University of Genova, Italy

Modeling and Control of Manipulators
Conducting practical lessons to introduce university students to programming techniques used in the control of robotic manipulators.

2017–2019	**Researcher in Underwater Robotics**	University of Genova, Italy

Software Architecture Development for Underwater Vehicles
Control architecture for a submarine vehicle for mining exploration and maintenance of underwater plants and its real-time software implementation. Developed within the H2020 European projects *DexROV* and *Robust*.

education

2017–2018	**24 CFU**	University of Genova, Italy

Conseguimento dei 24 crediti per l'insegnamento
University training in the fields of: Pedagogy, Psychology, Anthropology and Teaching Methodologies.

2014–2017	**PhD in Robotics and Autonomous Systems**	University of Genova, Italy

Cooperative Robotics for the Smart Factory
Design and implementation of a generalized real time control framework capable of: handling different robotic structures (fixed base arms, single and dual arm mobile manipulators either working on ground or underwater) in a uniform way, handling cooperation between different agents.

2012–2014	**Masters of Robotics Engineering - EMARO**	University of Genova, Italy

Swarm of autonomous MAVs in urban Search and Rescue applications
Investigating complete terrain coverage algorithms that minimise the coverage time in the framework of swarm robotics involved in search and rescue applications. Graduation mark 105/110.

2012–2014	**ISICT Excellence Program**	Genova, Italy

Master Degree Additional Courses
Courses in the area of information and communication technology, with an emphasis on bridging the gap between university research and business world.

Winter 2013	**Erasmus Programme**	Warsaw University of Technology, Poland

Erasmus student exchange within the EMARO master course, with particular focus on bio-robotics and bio-mechanics.

2007–2012	**Bachelor of Electronic Engineering**	University of Messina, Italy

Noise measurements for non-invasive characterisation of biological tissues
In this thesis is showed how by means of noise measurement is possible to perform non-invasive bio-impedance measurements to characterise biological tissues. Graduation mark 109/110.

2002–2007	**Scientific High School**	Liceo Scientifico Seguenza, Italy

The Invisible Problems
Analysis and possible developments of the 21st century technological innovations: multitasking, ebook and virtual reality. Graduation mark 100/100.

projects

2014	**Biorobotics - Gait Design for a Quadruped Robot**	Warsaw university of Technology

The task of this project was to design the gait for a quadruped robot: choose the step length, the leg-end forward shift, backward shift neglecting the masses of the legs. Draw the top view of the supporting polygon and localization of the Center Of Mass (COM) at the beginning and at the end of each support phase. Then, assuming that the machine is walking with a constant velocity, show the above drawings and calculations taking into account the leg masses (assuming leg end trajectories).

2013	**Dealing with Unlabeled Data for Smartphone-based HAR**	University of Genova, Italy

The project consisted in the implementation of an Android-OS smartphone application able to gather sensory data from users while they perform daily life activities (e.g. standing, sitting, laying down, walking, walking upstairs, walking downstairs) and subsequently be able to automatically include new unlabelled samples into the HAR model for improving the classification performance.

2013	**Pick and place task using a Comau Smart5SIX robotic arm**	University of Genova, Italy

The project consisted in the development of a software and hardware framework to perform a precise pick and place task using a magnetic gripper mounted on a Comau SmartSIX robotic arm. In particular, firstly the flange and hydraulic system of the gripper was set up, and after was created a program to perform the pick and place task.

certifications

2014   **TOEFL - Test of English as a Foreign Language**   British School Liguria S.r.l.
Passed the proficiency exam for non-native English language speakers with a grade of 102/120.

awards

2012   **Merit Scholarship**   ISICT, Genova
Istituto Superiore di Studi in Tecnologie dell'Informazione e della Comunicazione
I was admitted at the Educational Excellence Program of ISICT (Institute of Advanced Studies in Information Technology and Communication) for the two years of the Master and I have been awarded the ISICT scholarship.

transferable skills

2016   **Summer School on Science Managment**   SoSMSE Consortium, Genova
School main objectives:
 a) write a research project and expose and defend it in front of a jury
 b) understand how to transfer laboratory results to industry having in view the market needs and the necessity to form a workgroup
 c) understand what is the intellectual property and how to protect it while collaborating with partners

2016   **Genova 2016 Academic Forum of EYP Italy**   European Young Parliament, Genova
Committee Delegate
The forum gathered 91 university students, discussing European most relevant issues to come up with innovative solutions to shape tomorrow's Europe. Session's theme "Interactions in the Mediterranean: exchange, conflict and cooperation".

1997–2010   **Scout Movement Member**   A.G.E.S.C.I. Group, Ganzirri 1
Member
Informal education with an to contribute to the development of young people in achieving their full physical, intellectual, social and spiritual potentials as individuals, as responsible citizens and as members of their local, national and international communities.

organization involvement

2019-present   **Legambiente**   Genova, Italy
Vice-president of the association *Legambiente Giovani Energie*, providing lessons of environmental education in primary and secondary school, and regularly practising volunteering and citizen science.

publications

[1] A. Tiranti, F. Wanderlingh, E. Simetti, G. Indiveri, and M. Baglietto. "Motion optimization strategy for Bearing-Only Tracking performed with a team of Autonomous Underwater Vehicles navigating in formation". In: *OCEANS 2023 Limerick*. 2023.

[2] P. Di Lillo, E. Simetti, F. Wanderlingh, G. Casalino, and G. Antonelli. "Underwater Intervention with Remote Supervision via Satellite Communication: Developed Control Architecture and Experimental Results within the Dexrov Project". In: *IEEE Transactions on Control Systems Technology* 29.1 (2021). Cited by 24, pp. 108–123.

[3] E. Simetti, G. Casalino, F. Wanderlingh, and M. Aicardi. "A task priority approach to cooperative mobile manipulation: Theory and experiments". In: *Robotics and Autonomous Systems* 122 (2019). Cited By 17.

[4] K. Darvish, F. Wanderlingh, B. Bruno, E. Simetti, F. Mastrogiovanni, and G. Casalino. "Flexible human–robot cooperation models for assisted shop-floor tasks". In: *Mechatronics* 75 (2018). Cited by 75, pp. 97–114.

[5] E. Simetti, G. Casalino, F. Wanderlingh, and M. Aicardi. "Task priority control of underwater intervention systems: Theory and applications". In: *Ocean Engineering* 164 (2018). Cited by 44, pp. 40–54.

[6] E. Simetti, F. Wanderlingh, S. Torelli, M. Bibuli, A. Odetti, G. Bruzzone, D.L. Rizzini, J. Aleotti, G. Palli, L. Moriello, and U. Scarcia. "Autonomous Underwater Intervention: Experimental Results of the MARIS Project". In: *IEEE Journal of Oceanic Engineering* 43.3 (2018). Cited by 75, pp. 620–639.

[7] F. Wanderlingh. "Cooperative Robotic Manipulation for the Smart Factory". PhD thesis. University of Genova, 2018.

[8] G. Casalino, E. Simetti, and F. Wanderlingh. "Robotized underwater interventions". In: *Lecture Notes in Control and Information Sciences* 474 (2017). Cited by 4, pp. 365–386.

[9] E. Simetti, F. Wanderlingh, G. Casalino, G. Indiveri, and G. Antonelli. "ROBUST project: Control framework for deep sea mining exploration". In: *OCEANS 2017 Anchorage*. Vol. 2017-January. Cited by 9. 2017, pp. 1–5.

[10] G. Casalino, M. Caccia, S. Caselli, C. Melchiorri, G. Antonelli, A. Caiti, G. Indiveri, G. Cannata, E. Simetti, S. Torelli, A. Sperindè, F. Wanderlingh, G. Muscolo, M. Bibuli, G. Bruzzone, E. Zereik, A. Odetti, E. Spirandelli, A. Ranieri, J. Aleotti, D.L. Rizzini, F. Oleari, F. Kallasi, G. Palli, U. Scarcia, L. Moriello, and E. Cataldi. "Underwater intervention robotics: An outline of the Italian national project Maris". In: *Marine Technology Society Journal* 50.4 (2016). Cited by 35, pp. 98–107.

[11] G. Casalino, E. Simetti, N. Manerikar, A. Sperinde, S. Torelli, and F. Wanderlingh. "Cooperative underwater manipulation systems: Control developments within the MARIS project". In: *IFAC-PapersOnLine*. Vol. 28. 2. Cited by 8. 2015, pp. 1–7.

[12] E. Simetti, G. Casalino, N. Manerikar, A. Sperinde, S. Torelli, and F. Wanderlingh. "Cooperation between autonomous underwater vehicle manipulations systems with minimal information exchange". In: *MTS/IEEE OCEANS 2015 Genova*. Cited by 20. 2015.