Riccardo Garofalo

Nationality: Italian | **Email address:** riccardo.garofalo@uniroma1.it

EDUCATION AND TRAINING

NOV 2023 – CURRENT Rome, Italy
DOCTOR OF PHILOSOPHY - PHD IN AERONAUTICS AND SPACE ENGINEERING Sapienza Università di Roma

2022 Rome, Italy
MASTER DEGREE IN AERONAUTICAL ENGINEERING Università Roma Tre

2019 Rome, Italy
BACHELOR DEGREE IN AEROSPACE ENGINEERING Sapienza Università di Roma

Monterotondo(RM), Italy
SCIENTIFIC HIGH SCHOOL DIPLOMA Liceo Scientifico "Giuseppe Peano"

LANGUAGE SKILLS

Mother tongue(s):   **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	B2	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

WORK EXPERIENCE

15 JUN 2023 – CURRENT Rome, Italy
RESEARCH FELLOW

Winner of a research grant in the university of Rome "Sapienza" in collaboration with ENEA (*Italian National Agency for New Technologies, Energy and Sustainable Economic Development*) for the development of an "In-flight electronic systems for two-phase flow experiments in microgravity".

ADDITIONAL INFORMATION

SKILLS

Digital Skills

Programming Lenguages: C, C++, Python, Fortran, Arduino, Matlab
Analysis and simulation programs: LabVIEW, Simulink, GNURadio, STK Basics
Microsoft Office: Microsoft Powerpoint, Microsoft Excel, Microsoft Word
Operating System: Linux, Windows, macOS

Technical Skills

- Good problem solver through the use of internet research and documentation.
- Signal analysis and processing
- Use of optimization processes for algorithms
- Good skills in editing documentation and presentations

Other

Excellent communication and team-working skills obtained thanks to the several projects done
Good public speaking skills

PROJECTS

MAY 2022 – CURRENT
Satellite operator Currently responsible of telecommunications and data handling of the 3 satellites that Sapienza has in orbit: LEDSAT and Wildtrackcube-Simba in LEO orbit and Greencube in MEO orbit. The job consists of being operational on a daily basis at the ground station of the university to manage the passages of the satellites.

2023
WildTrackCube-SIMBA Involved in serveral tests and analysis about innovative IoT (Internet of Things) technology through spread-spectrum modulation with WildTrackCube-SIMBA, a 1U CubeSat conceived by Sapienza University of Rome, Machakos University and University of Nairobi. The mission objective is to demonstrate an innovative wildlife tracking system.

Broglio Space Center (Malindi, Kenya), 2023

2021
GREENCUBE Involved in the Greencube project. Greencube is a micro-garden 6000 km from Earth to grow fresh vegetables for future space missions, designed by an all-Italian scientific team. The mini-satellite was launched during the inaugural flight of VEGA-C, the official carrier of the European Space Agency (ESA). He worked on the integration and software development.

2019 – 2021
Horizon 2020 Involved in the HEMERA programme, funded by the Horizon 2020 framework programme of the European Union for the stratospheric ballon-borne research. He worked on the on-board software development and telecommunication system for the STRAINS Experiment, an innovative tracking system test on-board a stratospheric balloon that was launched from Esrange in September 2021.

Esrange(Sweden), 2021

2019
Rexus/Bexus programme Worked at the S5Lab (Sapienza Space Systems and Space Surveillance Laboratory) for the REXUS/BEXUS programme, realized under a bilateral Agency Agreement between the German Aerospace Center (DLR) and the Swedish National Space Agency (SNSA) in collaboration with the European Space Agency (ESA). He was involved on the on-board software development and telemetry tracking and control system for the TARDIS Experiment (Tracking Attitude and Radio-based Determination In Stratosphere) and for the assembly of the experiment with the balloon in Kiruna, launched from the Esrange Space Center in the north of Sweden.

Esrange(Sweden), 2019

2018
CanSat Competition 2018 (Stephenville, Texas) Team Leader and Flight Software Design responsible of the Sapienza Space Team for the CanSat Competition.

Stephenville(Texas,USA), 2018

2017
CanSat Competition 2017 (Stephenville, Texas) Flight Software Design responsible of the Sapienza Space Team for the test of an atmosferic reentry system performed in Texas, for the CanSat Competition, organized by the American Astronautical Society (AAS) and sponsored by NASA.

Stephenville(Texas,USA), 2017

PUBLICATIONS

Stratospheric balloon attitude and position determination system based on the VHF omnidirectional range signal processing: TARDIS experiment
– 2019
Luigi di Palo, Veronica Bandini, Emanuele Bedetti, Giuia Broggi, Luca Collettini, Paola Celesti, Davide Di Ienno, RIccardo Garofalo, Francesco Iovanna, Giulio Mattei, Paolo Marzioli, Fabrizio Piergentili, Fabio Santoni; **VOR (VHF Omnidirectional Range) based attitude and position determination system on a**

stratospheric balloon: TARDIS experiment, "Metrology for Aerospace" presented in the 2019 IEEE International Workshop on Metrology for Aerospace.
(Turin, Italy, 19-21 June 2019)

MetroAeroSpace 2019 - Proceedings, 2019, pp. 607-612, 8869649

The TARDIS experiment: An innovative VOR-based system for HAPS backup positioning and attitude determination

Veronica Bandini, Luigi di Palo, Emanuele Bedetti, Giuia Broggi, Paola Celesti, Luca Collettini, Davide Di Ienno, RIccardo Garofalo, Francesco Iovanna, Giulio Mattei, Andrea Gianfermo, Paolo Marzioli, Fabrizio Piergentili, Fabio Santoni; The TARDIS experiment: an innovative **VOR-based system for HAPS backup positioning and attitude determination,** IAC-19, 70th International Astronautical Congress (IAC).
(*Washington D.C., United States, 21-25 October 2019*)

Proceedings of the International Astronautical Congress, IAC, 2019-October, IAC-19_B2_4_7_x53787

TESTING A VOR-BASED POSITION AND ATTITUDE DETERMINATION SYSTEM IN THE STRATOSPHERE: THE TARDIS EXPERIMENT

Luigi di Palo, Veronica Bandini, Emanuele Bedetti, Giuia Broggi, Luca Collettini, Paola Celesti, Davide Di Ienno, RIccardo Garofalo, Francesco Iovanna, Giulio Mattei, Paolo Marzioli, Fabrizio Piergentili, Fabio Santoni; **TESTING A VOR-BASED POSITION AND ATTITUDE DETERMINATION SYSTEM IN THE STRATOSPHERE: THE TARDIS EXPERIMENT,** "AIDAA" (Associazione Italiana Di Aeronautica e Astronautica - Italian Association of Aeronautics and Astronautics) presented at the university of Rome "La Sapienza".
(Rome, Italy, 9-12 September 2019)

From stratospheric experiments to CubeSat development: Lessons learned from the S5Lab participation into ESA hands-on educational programmes

Proceedings of the International Astronautical Congress, IAC, 2019-October, IAC-19_E1_3_8_x53875

In-orbit autonomous laboratory for microgreens cultivation on a nano-satellite: GreenCube mission
– 2020
71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.
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IAC-20,A2,7,11,x60241

Innovative tracking techniques approaches: from stratospheric vehicle testing to commercial space transportation applications
– 2020
71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.
Copyright ©2020 by the International Astronautical Federation (IAF).

IAC-20,D6,1,7,x58842

Lessons learned from the S5Lab hands-on student activities on the LEDSAT, GREENCUBE and WildTrackCube-SIMBA nanosatellites
– 2020
71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.
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IAC-20,E1,4,7,x60016

Stratospheric balloon tracking system design through Software Defined Radio applications: STRAINS experiment
– 2022
Acta Astronautica 193 (2022) 744–755

Software-Defined Multi-Lateration tracking for near-space, suborbital and space vehicles: development of the STRAINS Experiment
– 2021
72nd International Astronautical Congress (IAC) – Dubai, UAE, 24-26 October 2021.
Copyright ©2021 by the International Astronautical Federation (IAF).

IAC-21,B2,7,8,x66142

Time Difference of Arrival for stratospheric balloon tracking: design and development of the STRAINS Experiment
– 2020
2020 IEEE 7th International Workshop on Metrology for AeroSPace (MetroAeroSpace)

SUCCESS

20 NOV 2019 – 10 JAN 2020
Scholarship

Winner of a **scholarship,** at La Sapienza University, to carry out the research activity to be performed at the Department of Mechanical and Aerospace Engineering entitled **"Test on Ikuns sub-satellite systems"**. The scholarship provides the execution of tests on the software and telecommunication of the Sapienza satellite "Ikuns" which was in orbit from May 2018 to June 2020

20 FEB 2023 – 19 MAY 2023
Scholarship

Winner of a **scholarship,** at La Sapienza University, to carry out the research activity to be performed at the Department of Mechanical and Aerospace Engineering entitled **"Evaluation of innovative mission envelopes for constellations of small Earth Observation satellites and preliminary constellation design"**. The scholarship provides the execution of tests and satellite orbit simulations.

Radio amateur license

Obtained, after a suitability check in the field of electrical engineering and telecommunications, the **radio amateur license** issued by the Ministry of Economic Development. This title gives the opportunity to assemble a telecommunications system and transmit on special bands.

NETWORKS AND MEMBERSHIPS

Member of AIAA Member of the American Institute of Aeronautics and Astronautics network

Member of IEEE Member of IEEE (Institute of Electrical and Electronic Engineers): IEEE's purpose is to foster technlogical innovation and excellence for the benefit of humanity