Riccardo Garofalo

EDUCATION AND TRAINING

[2022]

Master Degree in Aeronautical Engineering

Università Roma Tre

Address: Rome, Italy

[2019]

Bachelor Degree in Aerospace Engineering

La Sapienza Università di Roma

Address: Rome, Italy

Scientific High School Diploma

Liceo Scientifico "Giuseppe Peano"

Address: Monterotondo(RM), Italy

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B2

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

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.

[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
[2019]

Stratospheric balloon attitude and position determination system based on the VHF omnidirectional range signal processing: TARDIS experiment

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

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)

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

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

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)*

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

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

[2020]

In-orbit autonomous laboratory for microgreens cultivation on a nano-satellite: GreenCube mission

71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.

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IAC-20,A2,7,11,x60241

[2020]

Innovative tracking techniques approaches: from stratospheric vehicle testing to commercial space transportation applications

71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.

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IAC-20,D6,1,7,x58842

[2020]

Lessons learned from the S5Lab hands-on student activities on the LEDSAT, GREENCUBE and WildTrackCube-SIMBA nanosatellites

71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October 2020.

IAC-20,E1,4,7,x60016

[2022]

Stratospheric balloon tracking system design through Software Defined Radio applications: STRAINS experiment

Acta Astronautica 193 (2022) 744–755

[2021]

Software-Defined Multi-Lateration tracking for near-space, suborbital and space vehicles: development of the STRAINS Experiment

72nd International Astronautical Congress (IAC) – Dubai, UAE, 24-26 October 2021.

IAC-21,B2,7,8,x66142

[2020]

Time Difference of Arrival for stratospheric balloon tracking: design and development of the STRAINS Experiment

2020 IEEE 7th International Workshop on Metrology for AeroSPace (MetroAeroSpace)

SUCCESS

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

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 MEM-BERSHIPS

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