Fabio Valerio Buonomo

● ABOUT ME

Ph.D. student in Aeronautics and Space Engineering at "La Sapienza" University of Rome.

● WORK EXPERIENCE

01/02/2025 – CURRENT Rome, Italy
RESEARCH FELLOW DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING , "LA SAPIENZA" UNIVERSITY OF ROME

Winner of the Reaserch Fellowship entitled:

[ITA] "Sviluppo del sistema di guida, navigazione e controllo di un rover hopper"
[ENG] "Development of the Guidance, Navigation, and Control System for a Hopper Rover"

10/2024 – 31/01/2025 Rome, Italy
JUNIOR RESEARCH FELLOW DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING , "LA SAPIENZA" UNIVERSITY OF ROME

Winner of the Junior Reaserch Fellowship entitled:

[ITA] "Analisi di dati ottici mediante tecniche di Computer Vision per la missione Europa Clipper"
[ENG] "Optical Data Analysis Using Computer Vision Techniques for the Europa Clipper Mission"

05/12/2023 – 05/10/2024 Rome, Italy
JUNIOR RESEARCH FELLOW DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING , "LA SAPIENZA" UNIVERSITY OF ROME

Winner of the Junior Reaserch Fellowship entitled:

[ITA] "Attività di verifica e validazione del software di generazione ed elaborazione dei dati altimetrici"
[ENG] "Software Testing and Validation for Altimetric Data Generation and Processing"

01/07/2023 – 31/10/2023 Rome, Italy
JUNIOR RESEARCH FELLOW DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING , "LA SAPIENZA" UNIVERSITY OF ROME

Winner of the Junior Reaserch Fellowship entitled:

[ITA] " Analisi combinata di dati altimetrici e ottici per la determinazione orbitale della sonda Europa Clipper"
[ENG] "Combined Analysis of Altimetric and Optical Data for Orbital Determination of the Europa Clipper Probe"

● EDUCATION AND TRAINING

2023 – CURRENT Rome, Italy
PH.D. IN AERONAUTICS AND SPACE ENGINEERING University of Rome "La Sapienza"

Website   https://www.uniroma1.it/it/pagina-strutturale/home | **Field of study** Robotics Space Systems   **Level in EQF** EQF level 8

2020 – 2023
MSC IN SPACE AND ASTRONAUTICAL ENGINEERING University of Rome "La Sapienza"

After the BSc in Aerospace Engineering I have enrolled in MSc Space and Astronautical Engineering choosing Mission curriculum. Currently I have already followed and certified the following courses:

1. Gasdynamics
2. SpaceFlight Mechanics

3. Control Systems
4. Space Structures
5. Space Missions and Systems
6. Interplanetary Trajectories
7. Fluidodynamics Astrophysics and Geophysics
8. Advanced Spacecraft Dynamics
9. Electronics
10. Electronics of Space Systems
11. Space Guidance and Navigation
12. Space Propulsion
13. Robotics Space Systems

ABSTRACT:

The thesis focuses on designing and testing a 2D Online Visual-SLAM (VSLAM) navigation system using the Extended Kalman Filter and maximum likelihood data association without prior environmental knowledge. It aims to enable real-time localization and mapping for autonomous planetary rovers. The system is implemented on ROS2 and tested through simulations in GAZEBO, comparing its performance to dead reckoning. This research addresses the challenges of autonomous navigation in uncharted environments.

Website https://www.uniroma1.it/it/pagina-strutturale/home | **Field of study** Robotics Space Systems |**Final grade** 107/110 |

Level in EQF EQF level 7| **National classification** Laurea Magistrale |**Type of credits** ECTS| **Number of credits** 120|

Thesis Visual SLAM for Planetary Rovers

2015 – 2020
BSC IN AEROSPACE ENGINEERING University of Rome "La Sapienza"

During in the BA in addition of compulsory courses I focused on specific topics regarding space mission, space environment,aerospace construction technology and structural calculation laboratory.

Certificated Exams for Aerospace Engineering :

   • Aerodynamics
   • Space Environment
   • Space Systems
   • Numerical Methods
   • Aerospace Structures
   • Aeronautic and Space Propulsion
   • Atmospheric and Spaceflight Mechanics
   • Aerospace Materials Technology
   • Telecomunication Systems

I acquired skills:

Structural analysis using Nastran and Patran Software
Matlab for simulations, integration of differential equations system, non linear and linear equations.

Thesis Work:

Working on BA Thesis I analyzed the effect of the atmospheric drag on a cubesat in Venusian orbit and verify if such satellite standard is a good choice for mission high risk high reward. The analysis required a big effort to integrate numerically the Gauss Equations using MATLAB. The analysis of Venus atmosphere was performed by using Venus Gram 2005, a Fortran based software developed by MSFC (Marshall Space Flight Center, Nasa) from which I extracted the atmospheric data to implement a simplier model included in the code for the integration.

Website https://www.uniroma1.it/it/pagina-strutturale/home | **Field of study** Aerospace Engineering |**Final grade** 104/110 |

Level in EQF EQF level 6| **National classification** Laurea Triennale |**Type of credits** ECTS| **Number of credits** 180|

Thesis The effect of atmospheric drag on a cubesat in a venusian orbit

09/2013 – 05/2014 Coorparoo (Brisbane), Australia
EXCHANGE STUDENT IN AUSTRALIA Coorparoo Secondary College

Address Stanley St E & Cavendish Road, QLD 4151, Coorparoo (Brisbane), Australia

Website https://coorparoosecondarycollege.eq.edu.au/

09/2009 – 07/2015 Ciampino (RM), Italy
SCIENTIFIC HIGH SCHOOL DIPLOMA Liceo Scientifico Statale " Vito Volterra"

Address Via dell'Acqua Acetosa 8A, 00043, Ciampino (RM), Italy **Website** http://www.liceovolterra.edu.it/ **Final grade** 98/100

Level in EQF EQF level 4 | **National classification** Diploma Liceale

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	B2	B2

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

DIGITAL SKILLS

AnacondaPython | Programming(Matlab, Python) | Robotics Toolbox MATLAB | Robotics toolbox python | Robotic Operative System (ROS) | Linux: Intermediate user | Microsoft/Microsoft Office | MATLAB, Simulink, | JPL MONTE orbit determination code | C++

NETWORKS AND MEMBERSHIPS

2018 – 2019 University of Rome "La Sapienza"
Sapienza Rocket Team

CONFERENCES AND SEMINARS

08/12/2019 – 12/12/2019 San Francisco, California (USA)
AGU Fall Meeting 2019

Link https://www.agu.org/fall-meeting-2019

PROJECTS

2017 – 2018
Airbus Sloshing Rocket Workshop 2018 - 2019

I partecipated with the Rocket Team at the Airbus Sloashing Rocket Workshop. The project proposed to the examinators consisted in a water rocket that once ended the propulsion was capable of gliding in order to travel the maximum distance possible. Inside the rocket there was a tank with inside liquid water and the aim of the project, beside reaching the maximum distance possibile, was to limit the sloshing phenomenon.

MANAGEMENT AND LEADERSHIP SKILLS

PhD Student Representative on the Doctoral Board of the Aeronautics and Space Engineering PhD Program

I have been elected as the PhD Student Representative on the Doctoral Board of the Aeronautics and Space Engineering PhD Program for the 2024-2027 triennium

Link https://phd.uniroma1.it/web/PHD-STUDENTS-AERONAUTICS-AND-SPACE-ENGINEERING_nI3556_EN.aspx

Student Representative at Academic Council of Aerospace Engineering (CAD) (Second Mandate)

I have been elected Student Representative at Academic Council of Aerospace Engineering for the biennial 2021-2023.
Member of Working Group MSAR (Master Degree in Space and Astronautical Engineering)
Member of Working Group Quality Assurance Management Commission
Member of Council of Aerospace Engineering

Student Representative at Academic Council of Aerospace Engineering (CAD)

I have been elected Student Representative at Academic Council of Aerospace Engineering for the biennial 2019-2021, I am member of the BAER's Work Group and I am spokesman for the first year MSAR (Master Degree in Space and Astronautical Engineering).

Link http://www.ingaero.uniroma1.it/index.php?option=com_content&view=article&id=843&Itemid=1310&lang=it

Student Representative at Liceo Scientifico "Vito Volterra"

During the school year 2014-2015 I was elected Student Representative for the School Board and Student Representative for the Class Board.

ADDITIONAL INFORMATIONS

Personal Data Treatment

I hereby authorize the use of my personal data in accordance to Legislative Decree 30 June 2003, n. 196 "Code concerning the protection of personal data" and in accordance to GDPR 679/16 - "European regulation on the protection of personal data"

Roma , 25/02/2025