



CARMINE BUONAGURA

SPACE ENGINEER

PROFILE

I am a 24-years-old aerospace engineer, based in Sorrento, Italy. I approached my studies with curiosity and without taking anything for granted, always going the extra mile to truly understand the concepts. I play football and it taught me the value of leadership and team working. I also love reading and traveling.

GET IN TOUCH

Via Talagnano 20A, 80067, Sorrento (NA)

+39 3347473498

carmine.buonagura96@gmail.com

Carmine Buonagura

LANGUAGES

Italian - Mother tongue

English - B2 level (Master's degree in English)

French - Scholastic level

SOFT SKILLS

- Communication
- Teamwork
- Adaptability
- Problem-Solving
- Creativity
- Time Management

EDUCATION

Master in Space Engineering

09/18-15/20

Politecnico di Milano

Degree achieved in the expected timeframe, keeping a G.P.A. of 29.1 on 30.
Final grade: 110/110 cum laude.

Bachelor's in Aerospace Engineering

09/15-09/18

Università degli Studi di Napoli "Federico II"

Degree achieved in the expected timeframe, keeping a G.P.A. of 28 on 30.
Final grade: 110/110.

High School

09/10-06/15

Liceo Scientifico "G. Salvemini"

Final grade: 93/100.

PROFESSIONAL EXPERIENCES

Politecnico di Milano - Research Fellow

03/21-current

Walle Mobility - Engineer

03/20-current

- Entrepreneurship Lab at PoliHub, Startup accelerator of Politecnico di Milano
- Feasibility study of an Urban Air Mobility (UAM) experimental leg using Vertical Take-off and Landing vehicles (VTOL)

SKILLS

Great ability in organizing autonomously the work and in managing responsibilities. Experience in working in teams and respecting tight deadlines.

- Excellent knowledge of the **Microsoft suite**
- Excellent knowledge of programming languages: **MATLAB, C, C++ and Python**
- Good knowledge of the **Simulink** tool
- Excellent knowledge of software for 2D and 3D modelling: **Catia V5 R21, Autodesk Inventor and Blender**
- Good knowledge of **Computer Vision, Machine Learning and Deep Learning**
- Good knowledge of **Keras and Tensorflow** libraries

PROJECTS

Master Thesis - Image Processing Robustness Assessment with Procedural Generated Minor Bodies Shapes

Existing minor bodies' 3D models were merged using both analytical and machine learning approaches. A tool that generates photorealistic synthetic images of minor bodies, with details as craters, boulders and surface roughness, was developed along with a Graphical User Interface (GUI). Four traditional image processing techniques were implemented and their performance for optical navigation (OpNav) assessed. The result is the possibility to tell the mission designer what is the best performing algorithm for a given minor body shape.

Modelling and Simulation

Modeling of the coupled thermal-electro-mechanical system and behavior of the solar panel assembly (SADA) of the LUMIO CubeSat and optimization of the attitude to achieve maximum power under the thermal constraints.

Payload Design

Development of the Phase 0 (definition of mission objectives, high-level and technical requirements) and preliminary design of an XRF camera and the related spacecraft subsystems (thermal, structural, OBDH, ...) to map the elemental abundance of platinum-group metals (PGM) and pathfinder on near-Earth asteroids.

Spacecraft Attitude, Dynamics and Control

Design and simulation in Simulink of the attitude control and determination system (ACDS) of a LEO CubeSat equipped with cold gas thrusters and reaction wheels, including determination and control algorithms for detumbling and Earth tracking.