

Marco Gannetti



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Education

University of Pisa 2020 - 2022

Master of Science in Space Engineering (110L, GPA: 4.00 / 4.00)

Pisa, Italy

- **Thesis:** Navigation of Sounding Balloons with Deep Reinforcement Learning (IEEE Journal)
- **Relevant Coursework:** Electric Propulsion, Rocket Propulsion, Spacecraft Structures, Space Systems, Spaceflight Mechanics, Space Environment

University of Pisa 2017 - 2020

Bachelor of Science in Aerospace Engineering

Pisa, Italy

- **Relevant Coursework:** Fluid Dynamics, Applied Thermodynamics, Aeronautical Engines, Aeronautical Systems, Aerospace Manufacturing

Experience

Leonardo 2023 - 2024

System Engineer

Florence, Italy

- Involved on GCAP (Global Combat Air Programme) Tempest project.
- I conducted researches on plasma generation and air breakdown through laser pulses.
- Realized neural networks for semantic segmentation of hyperspectral images.

Space Lab Laboratories 2022 - 2023

Researcher

Pisa, Italy

- Conducted research in the field of Deep Reinforcement Learning applied to stratospheric vehicle dynamics.
- Oversaw the design and development of two launchable payloads for stratospheric platform control and navigation.
- Performed research on wind patterns through the use of machine learning, statistical analysis, and system development for navigation.
- My research has enabled the development of a control system capable of tripling the performance of these vehicles.
- Built and launched a test prototype.
- Published a paper on the IEEE journal entitled "Navigation of Sounding Balloons with Deep Reinforcement Learning".

Department of Space Engineering, University of Pisa 2021 - 2022

Space System Engineer

Pisa, Italy

- Team leader for the PETRA mission.
- PETRA (Prospector for Extraction of Terrestrial-like Resources from Asteroids) is a prospecting space mission for near-earth asteroids.
- My team carried out the pre-phase A study and satellite design.
- The project successfully passed the phase after more than 10 months of work.

Projects

SLS Intertank

- With three other engineers, I performed a structural analysis of elements of the Space Launch System, with specific attention to the intertank.
- We utilized semi-analytical and FEM (Finite Element Method) methods in our analysis.
- The purpose of the a posteriori analysis was to highlight critical choices in the design of this element.

Gridded Ion Thruster Simulator

- With the guidance of electric propulsion luminary Mariano Andrenucci, I developed an open-source PIC (Particle-in-cell) simulator for Gridded Ion Thrusters for different magnetic field configurations.
- The simulator has been shown to produce results consistent with Langmuir's theory.

Publications

- M. Gannetti, M. Gemignani and S. Marcuccio, "Navigation of Sounding Balloons with Deep Reinforcement Learning", IEEE 10th International Workshop on Metrology for AeroSpace (MetroAeroSpace), 2023

Technical Skills

Languages: Python, C, Javascript, VB.Net, PHP

Technologies: Pytorch, Tensorflow, Tensorflow.js, RaspberryPI, Arduino

Softwares: Solidworks, CATIA v5, Ansys, Office

Languages

Italian: Native language

English: C1 level

French: B1 level

Social Engagements

Club Member: Space Lab Laboratories, Pisa

Volunteer: at CoderDojo, nonprofit association for children's computer and robotics education.

Volunteer: at Matassino, grest group leader.

Further informations on my website: marcogannetti.com