

Veronica SAZ ULIBARRENA

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📍 Leiden, The Netherlands
🇪🇸 Nationality : Spanish



I am an aerospace engineer and computational astrophysicist passionate about space exploration and complex problems. I have worked on interplanetary trajectory design, celestial mechanics, optimization, and machine learning. I want to be part of a team of passionate people working on exciting, challenging projects that have a positive impact on the world.

EXPERIENCE

May 2025 May 2021	Ph.D. researcher , LEIDEN OBSERVATORY, Leiden, The Netherlands Machine Learning for the Gravitational N -body problem. <ul style="list-style-type: none">➤ Understanding of the potential applications and limitations of Machine Learning tools such as Physics-informed Neural Networks and Reinforcement Learning for celestial dynamics.➤ Supervised bachelor and master students.➤ Developed communication skills by presenting my work at international, multi-disciplinary conferences such as Information Universe Conference (2021), NeurIPS (2022), ENUMATH (2023).➤ Participated in international collaborations and multi-disciplinary teamwork.➤ Contributed as part of the scientific organization committee for the AMUSE Summer School (2021).➤ Software tools : Python, Tensorflow, PyTorch, Git
April 2020 February 2020	Student Job Python Modeller, DELFT OFFSHORE TURBINE, Delft, The Netherlands <ul style="list-style-type: none">➤ Python modeling of a system of offshore wind turbines.➤ Learned about hydraulics, control systems, programming, and graphic interface development with PyQt.➤ Developed a product (simulation and plotting code) based on the requirements of different team members.
November 2019 August 2019	Master Internship, EUROPEAN SPACE AGENCY (ESA) AT ESOC, Darmstadt, Germany Interplanetary trajectory optimization. <ul style="list-style-type: none">➤ Tested and optimized a range of selected trajectories for JUICE mission using ESA's newly developed software.➤ Developed a graphic user interface for the optimization software.➤ Learned about the stages of a space mission and worked with a team of international, interdisciplinary members.

EDUCATION

2023-2024	Advanced Project Management Course (12 h), LEIDEN OBSERVATORY, Leiden, The Netherlands Understanding and application of project management concepts to a Ph.D. research project.
2021	Summer School Science Communication (40 h), LEIDEN OBSERVATORY, Leiden, The Netherlands Theory of science communication, target audiences, and how to write a book, among others.
2018-2021	Master in Aerospace Engineering, Space Flight track, Space Exploration focus , TECHNICAL UNIVERSITY OF DELFT, Delft, The Netherlands <ul style="list-style-type: none">➤ Specialized in transfer orbits and optimization with courses such as Satellite Orbit Determination, Numerical Astrodynamics, Propagation and Optimization in Astrodynamics, Engineering Optimization, and Mission Geometry.➤ Master thesis : application of Artificial Neural Networks to the optimization of interplanetary missions using low-thrust propulsion.➤ Master internship at European Space Agency working on the optimization of the trajectory of JUICE.
2014-2018	Bachelor in Aerospace Engineering, UNIVERSITY OF LEON, Leon, Spain <ul style="list-style-type: none">➤ Carried out independent study, developed cooperative projects, solved engineering-related problems, and attended aerospace-related lectures.➤ Relevant courses : Flight mechanics, Aerodynamics, Jet Engines, Control Systems, Modelling Complex Systems.

TECHNICAL EXPERTISE

Text Editors	Latex, Word, Power Point
Programming	Python, PyQt, Tensorflow, PyTorch, Matlab, C++, Pandas, Matplotlib
Operating Systems	Ubuntu, Windows, Oracle Linux
Software tools	Excel, Inkscape, Visual Studio Code, Git, Github, Autocad, Abaqus

LANGUAGES

Spanish	● ● ● ● ●
English	● ● ● ● ●
Dutch	● ● ● ● ●
French	● ● ● ● ●

KEY STRENGTHS

- > Communication skills
- > Leadership, teamwork, and international experience
- > Analytical skills
- > Persistent, organized, independent, adaptable

PROJECTS

ESA ALPBACH SUMMER SCHOOL AND CONCURRENT ENGINEERING WORKSHOP JULY AND NOVEMBER 2024

 [Projects](#)

ESA Summer School and ESA concurrent engineering design workshop for the design of an interplanetary space mission. Part of the Mission Analysis team.

COORDINATOR OF ASTRONOMY ON TAP LEIDEN APRIL 2022- APRIL 2024

 <https://aot.strw.leidenuniv.nl/>

Volunteering work on science divulgation for the general public. Public speaking and organization of speakers for monthly events.

MASTER THESIS, DELFT UNIVERSITY OF TECHNOLOGY JUNE 2020 - APRIL 2021

 github.com/veronicasaz/MasterThesis  [TU Delft Repository](#)

Low-Thrust Interplanetary Trajectory Optimization Using Pre-Trained Artificial Neural Network Surrogates

- > Developed astrodynamics libraries for interplanetary trajectory design.
- > Developed own optimization codes to adapt to problem requirements.
- > Researched and applied machine learning techniques.

BACHELOR THESIS, VERMONT UNIVERSITY - UNIVERSIDAD DE LEON SEPTEMBER 2017 - JULY 2018

 github.com/veronicasaz/https://github.com/veronicasaz/AstrodynamicsScripts

Application of Basin Hopping method to the optimization of fuel mass for the preliminary design of a low-thrust trajectory from Earth to Mars.

Developed astrodynamics libraries for interplanetary trajectory design. Carried out independent study and research.

NATIONAL COMPETITION OF THE AIAA (AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS) SEPTEMBER 2017 - JULY 2018

 <https://www.aiaa.org/>

Member of the AIAA club at the University of Vermont. Participated in discussions, and shared aerospace-related news. Participated in the national competition : *Undergraduate Team Space Transportation - Pluto Orbiter*, cooperation and exchange of ideas with engineering students to create a possible mission to Pluto.

ORGANIZER AT AEPsa (STUDENT ASSOCIATION FOR PROMOTION OF AUTONOMOUS SYSTEMS) SEPTEMBER 2015 - JUNE 2017

Student Association at the University of Leon.

Carried out quadcopter-assembly projects with other Aerospace Engineering students. Organized and taught courses for both adults and children related to UAV's (Unmanned Aerial Vehicles) legislation, safety, and technical characteristics.

INTERESTS AND ACTIVITIES

2001 - Present	Karate : Second Dan-black belt, regional-level competitions, organization of international competitions
Other	Traveling, sports, reading, photography, guitar playing, drawing

PUBLICATIONS

Full list of publications available at  [Linkedin/Veronica Saz Ulibarrena](#)

REFERENCES

References available upon request