

YANN SADOU

SPACE SYSTEMS ENGINEER

Pasadena, CA, USA

ysadou@caltech.edu

SUMMARY

Space systems engineer with a multidisciplinary and international background in the design, analysis, and integration of advanced space missions. Experienced in systems engineering, electronics, mechanical design and thermal engineering. Skilled in linking structural, thermal, and guidance subsystems to mission objectives through precise modeling and simulation, as well as hardware validation. Adept at navigating the interface between physics, electronics, aerospace systems, and mechanical design to develop robust, performance-driven solutions. Proven ability to contribute effectively in both high-performance research teams and operational, industry-oriented environments.

WORK EXPERIENCE

Research Assistant, California Institute of Technology

Feb 2024 - Present

Pasadena, CA, USA

- Designed and optimized cryogenic support structures and RF electronics for ground-based astronomical instruments operating at Sub-Kelvin temperatures, ensuring structural integrity and thermal isolation under extreme temperature gradients.
- Engineered mechanical interfaces between detector arrays and optical systems, integrating mirror assemblies and precise beam mapping to align optical paths within sub-millimeter tolerances.
- Developed support hardware for Microwave Kinetic Inductance Detectors (MKIDs), targeting their implementation in next-generation satellite and observatory missions.
- Applying expertise in cryogenic engineering to enable superconducting detector functionality in ultra-low-temperature environments.
- Leading laboratory operations and collaborating with NASA physicists, engineers, and international partners to advance detector design.

Space Systems Engineer , European Space Agency (SEEDS Program)

Apr 2023 - Oct 2023

Phase 1 - University of Leicester, Leicester, UK

Phase 2 - Polytechnic University of Turin, Turin, IT

Phase 3 - ISAE-SUPAERO, Toulouse, FR

- Participating in the SpacE Exploration and Development Systems (SEEDS) international student program with the European Space Agency, the UK Space Agency, ASI, and CNES, focusing on advanced space exploration concepts, including a Human Mars Lander and a European Commercial Space Station in LEO.
- Conducting electronic design, mission analysis as well as developing EDL strategies for the Human Mars Lander.
- Advancing spacecraft architecture and mission planning, attending ASI workshops on payload integration and surface operations.
- Finalizing mission design, cost analysis, and technology concepts for the Mars Lander and Commercial Space Station.
- Producing and defending technical presentations at ESA (ESTEC), showcasing project milestones and scientific contributions.
- Authoring and co-authoring papers for conferences and publications, contributing to space exploration research.

Co-Authored Publications

- New Space, "Feasibility Study of a European Commercial Space Station in Low Earth Orbit", November 2024, Available from:
<https://www.liebertpub.com/doi/abs/10.1089/space.2024.0017?journalCode=space>
 - "Feasibility study on a crewed Mars lander", October 2023, Available from:
https://www.researchgate.net/publication/376310515_Feasibility_study_on_a_crewed_Mars_Lander
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EDUCATION

PostGraduate Master - Space Systems Engineering

2022-2024

ISAE-SUPAERO, Toulouse, FR

Specialized coursework:

Missions and Systems, Space Environment and Effects, Mission Analysis and Orbital Mechanics, Space Systems Architecture (Ground Segments, Satellites, Sub-Orbital Planes), Space Communications Systems, GNSS Localization, Satellite Propulsion, Thermal Control Systems.

Project:

Design of a Satellite Servicer for On-Orbit Refueling and Space Debris Cleaning.

Master of Science - Energy Engineering

2020-2021

Polytechnic University of Madrid, Madrid, SP

Specialized coursework:

Combustion, Energy Economics, Thermal Power Analysis, Fluids Engineering, Design and Optimization of Thermal Systems, Exergetic and Thermoeconomic Analysis.

Project:

Integration of Phase Change Materials (PCM) in the Thermal Optimization of Electronic Components

Summa Cum Laude - Congratulations from the Jury

Master of Science - Mechanical Engineering

2019-2021

Arts et Métiers ParisTech, Bordeaux, FR

Specialized coursework:

Advanced Solid Mechanics, Thermal Engineering, Fluid Mechanics, Electronics and Automatics, Energetics, System Design, Computer Science, Material Sciences.

Project:

Developed and launched a mini-rocket for the French Space Agency C'Space program, emphasizing successful deployment, retrieval systems, and electronics integration.

Bachelor of Science - Mechanical Engineering

2015-2019

Arts et Métiers ParisTech, Bordeaux, FR

Specialized coursework:

Basics Solid Mechanics, Thermal Engineering, Fluid Mechanics, Electronics and Automatics, Energetics, System Design, Computer Science, Material Sciences.

TEACHING EXPERIENCES

Professor of Mathematics

Oct 2023 - Dec 2023

Sainte-Claire College, Dieupentale, FR

- Taught mathematics to 8th and 9th-grade students, designing engaging lesson plans to simplify complex concepts and bringing understanding of mathematical principles.
- Assessed student progress through regular tests and assignments, providing feedback to support their academic growth.
- Identified and addressed individual learning needs, offering additional support and tutoring to students struggling with mathematical concepts.
- Integrated real-world examples and problem-solving scenarios to make mathematics relatable and applicable to students' everyday lives.

Private Tutor in Engineering Sciences

2016 - Present

- Provided private tutoring in engineering sciences across all levels from high school through master's degree covering subjects such as Mathematics, Applied Physics, Mechanics, and Computer Science.

OUTREACH

Judge and Chair Representative - Applied Mechanics Senior Division

Apr 2025

California Science and Engineering Fair, Thousand Oaks, CA, USA

- Selected as a judge for the Senior Division – Applied Mechanics at the 2025 California Science and Engineering Fair, evaluating innovative high school research projects in mechanical and structural engineering.
- Chosen by the panel to serve as representative, tasked with presenting the top-ranked project in the division to the full CSEF congress during deliberations for Project of the Year.
- Assessed technical merit, originality, and real-world application of projects; provided written feedback and contributed to group deliberations to determine award rankings.
- Participated in a competitive and prestigious statewide fair that showcases California's top STEM talent, supporting outreach and excellence in science and engineering education.

EUROAVIA Bordeaux - President and Co-Founder

2019 - 2021

Bordeaux, FR

- Organizing and supervising aerospace events, workshops, and networking opportunities, while leading multidisciplinary teams on space projects, establishing partnerships with aerospace companies and academic institutions, executing technical conferences and company visits.

The Planetary Society - Active Member

2024 - Present

Pasadena, CA, USA

- Active member of The Planetary Society, founded by Carl Sagan, engaging with a global community dedicated to advancing space exploration, science, and advocacy. Participated in initiatives promoting planetary research, exploration technologies, and public outreach.

3AF Aeronautical and Astronautical Association of France - Executive Member

2019 - 2021

Bordeaux, FR

- Served as a student executive board member of 3AF, contributing to the promotion of aeronautics and astronautics in France. Played a key role in organizing events creating collaboration among industry professionals, and supporting initiatives aimed at advancing aerospace research and innovation.

WORKSHOPS

- Italian Space Agency Workshop and Concurrent Design Facility - Rome 2023
- Universpace Summer School - CNES - Toulouse 2016 and 2021 Editions
- NASA LISA Sprint - Pasadena 2024

CONFERENCES

- International Astronautical Congress - Milan 2024 and Baku 2023 (Contributor)
- AAE International Conference on Space Exploration - Turin 2023 (Attendee)
- European Space Conference - Bordeaux 2020 (Attendee)
- UCLA Dark Matter 2025 (Attendee)

AWARDS AND PRIZES

- Finalist – ISAE-SUPAERO Excellence Award 2024 (for research at Caltech)
- Global Management Challenge Award 2020 - Madrid

RECOMMANDATIONS

Pr. Sunil Golwala

Caltech

Professor of Physics, Deputy Executive Officer for Astrophysics

golwala@caltech.edu

Pr. Stéphanie Lizy-Destrez

ISAE-SUPAERO

Space Systems Full Professor

stephanie.lizy-destrez@isae.fr

Dr. Fabien Defrance

NASA Jet Propulsion Laboratory

Research Scientist

fabien.m.defrance@jpl.nasa.gov

HUMANITARIAN ENGAGEMENT

- BTK (Bouge Ton Karma !) - 2 month humanitarian mission in India (building foster homes and teaching Maths and English to children)
- Volunteer work in animal shelters and foster care for abandoned animals
- Red Cross French organization - working in shelters and distribution centers for homeless people

SKILLS

- French : Native
- English : Fluent (TOEFL iBT 100/120)
- Spanish : Fluent
- Italian : Basics

- Solidworks
- Matlab
- Labview
- GMAT
- Zemax Optic Studio
- Systema
- Abaqus

- Python
- C/C++
- Java

HOBBIES

- Astronomy (Club at Caltech)
- Collecting and preserving natural rocks and fossils from field explorations (Utah and California mainly)
- Music (Guitar, Ukulele and singing)
- Painting (Watercolor and India ink illustration)
- Badminton (2nd place – Departmental Championship, Lot (France))