Adhitya Sripennem

LinkedIn: linkedin.com/in/adhityaspas/
Portfolio: adhitya-spas.github.io/webpage/

Email: adhitya.sripennem@colorado.edu
Mobile: +1 720-561-0206
Home: 2995 Glenwood Dr., Boulder, CO 80301

Summary

Aerospace Engineering graduate specializing in radio science and satellite systems design. My experience includes leading teams on CubeSat missions (CANVAS, MAXWELL, SWARM-EX), developing complex flight software, and research on ionospheric profiles using novel passive radar techniques. I am a highly motivated candidate looking to pursue a Ph.D. in Space Sciences & Engineering.

Education

- **Master of Science in Aerospace Engineering Sciences** — Colorado, USA
  University of Colorado Boulder — *Aug 2022 - Dec 2024*
  Graduate Certification in Satellite Systems Design
  Instrumentation Lead on CANVAS, Flight Software / Command & Data Handling Lead on MAXWELL
  Teaching Assistant in Astrophysical and Planetary Sciences Department for Fall '22, Spring '23, Fall '23, Spring '24 and Fall '24
  Courses: *Space Mission Development, Radar Remote Sensing, Intro to GNSS, Aerospace Environment, Engineering Data Analysis Methods, Atmospheric Thermodynamics and Dynamics, Graduate Projects (MAXWELL)*

- **Bachelor of Technology in Aerospace Engineering** — Kattankalathur, India
  SRM Institute of Science and Technology — *Jun 2018 - May 2022*
  Researcher at Astrophilia (University Astrophysics Club) — Member of Structure, Design and Analysis team of SRM Hyperloop
  Courses: *Remote Sensing and GIS, Robotics Engineering, High Temperature Gas Dynamics, Space Mission Design and Analysis*

- **Master Diploma in Product Design and Analysis** — Chennai, India
  CADD Centre Training Services Pvt. Ltd. — *Sep 2018 - Mar 2021*
  Certification course for software: *Ansys, CATIA, NX CAD, Nastran and SolidWorks*

Skills Summary

- **Languages** Julia, Python, Embedded-C, C, C++, R programming, SQL, HTML
- **Modelling** SolidWorks, CATIA, NX-CAD, Fusion 360, Pro-E
- **Analysis** Ansys Workbench, Ansys Fluent, NX-Nastran
- **Visualization** MATLAB, Mathematica, QGIS, GMAT, Jupyter Notebook
- **Additional Skills** Linux, GitHub, LASP-HYDRA (XML), Embedded Systems, MS office, Machine Learning, AI

Research Experience & Projects

- **Cubesat Flight Software Engineer** — Colorado, USA
  Colorado Center for Astrodynamics Research — *Dec 2024 - Present*
  - **PI: Dr. Scott Palo** Missions: MAXWELL, SWARM-EX
  - Involved in Flight Software/ Avionics, Subsystem Integration and Ground Station Software design - Programming in C, C++, Embedded Linux, Python

- **Independent Research - Passive Radar Remote Sensing** — Colorado, USA
  University of Colorado Boulder — *Sept 2024 - Present*
  - **Dr. Sean Peters** - Ionospheric Tomography over Europa
  - Developed and applied an Algebraic Reconstruction Technique (ART) to model Europa's ionospheric electron density. Optimized historical data from Galileo and Juno to create day/night models, and performed reconstructions using simulated VHF and HF signals to validate the combined dual-frequency approach.

- **Instrumentation Lead for CANVAS Cube Satellite** — Colorado, USA
  University of Colorado Boulder (National Science Foundation (NSF)) — *Jan 2023 - Present*
  - **PI: Dr. Robert Marshall** (Climatology of Anthropogenic and Natural VLF wave Activity in Space)
  - **FPGA Testing -** Developed a bit-accurate model and validated test scripts for FPGA spectra & cross-spectra outputs using Python, FFTs, and logic analyzers to ensure accurate signal processing.
  - **Instrument Testing -** Conducted verification for B-Field and E-Field instruments, performing sensitivity analyses, frequency response, and crosstalk tests using signal generators and oscilloscopes.
  - **Payload Validation -** Performed outdoor EMI testing at USGS; designed Python scripts to automate long-term payload tests, ensuring data integrity from flight boards and instrument algorithms.

- **Command & Data Handling Lead for MAXWELL Cube Satellite** — Colorado, USA
  University of Colorado Boulder (Air Force Research Laboratory (AFRL)) — *Jul 2023 - Dec 2024*
  - **PI: Dr. Scott Palo** (Multiple Access X-band Wave Experiment in Located in LEO)
  - Managing Flight Software with focus on CET (Command Execution Test). Working on flight software interface with other subsystems (ADCS, EPS, PLDC and Comms) using LASP-HYDRA ground support emulator.
  - Conducted Simulated Communications Test to test Radio communication between Satellites over UHF. Performed DITL (Day-in-the-life) tests to validate software functionality.

- **Mission Proposal for Density ExpLorer Triplet Array** Colorado, USA
  Mission Design and Development for Space Science, University of Colorado Boulder *Aug 2023 - Dec 2023*
  - Small satellite mission to study Plasmaspheric Refilling and a spatio-temporal study of Density Ducts in the Earth's Magnetosphere.
  - Prepared detailed report on Science objectives and Mission Design. Involved in Instrumentation, 3D model of the spacecraft and Science Traceability Matrix.
- **Analysis of Ionospheric data from MARSIS** Colorado, USA
  University of Colorado Boulder *Jan 2023 - May 2023*
  - Utilized data from MARSIS (Mars Advanced Radar for Subsurface and Ionosphere Sounding) to conduct a comprehensive analysis of the Martian ionosphere.
  - Generated ionograms and applied the Chapman profile on ionospheric soundings to derive essential parameters contributing to a deeper understanding of Mars' ionospheric characteristics.
- **Flow separation control using Vortex Generators on Wing Flap** India
  SRM Institute of Science and Technology *Nov 2021 - May 2022*
  - **University Major Project - Project Guide:** Dr. R. Mohamed Arif
  - Computationally fabricated an efficient placement of Vortex Generators on Wing Flap for delaying the flow separation.
- **Design of Solar Powered High Altitude Pseudo Satellite for Payload Launch Assist** India
  SRM Institute of Science and Technology *Jul 2021 - Nov 2021*
  - **University Minor Project - Project Guide:** Dr. R. Mohamed Arif
  - Design to minimise cost of small satellite launch by enabling re-usability of primary launching mechanism.
- **Space Mission Design - CubeSat and ECLSS Design** India
  Valles Marineris International *Jul 2020 - Jan 2022*
  - **Intern:** Developed a closed ECLSS system for a Space Module design for stratospheric missions
  - Development of 1.5U CubeSat Mission to observe Plant Growth through Nutrient Gel-based Hydroponics System.
- **Analytical Study of Dark Matter Mass Distribution Around Spiral Galaxies** India
  Tod'Aérs *Nov 2020 - Jul 2021*
  - **Junior Research Fellowship - Research Advisor:** Dr. Pavan Kumar
  - Studied and performed Decomposition on the Rotation Curves of 4 Spiral Galaxies. Further data analysis on the paper being done by the team, by including different types of galaxies and plotting their NFW profiles for the same.
- **Solar Physics Research** India
  Society for Space Research Education and Development *Jun 2020 - Aug 2020*
  - **Research Intern - Research Advisor:** Mr. Sundar M.N
  - Developed an ML model to predict Solar Flare at an accuracy of 0.79. Proved our hypothesis (71% Positive) on 'An inverse correlation exists between the Sunspot Area and Solar Activity Parameters'

Publication & Conference

- Sripennem, A., Peters, S., Marshall, R. Simulating a Combined Active-Passive, Dual-Frequency Radar Reconstruction of Europa's Ionospheric Profile, *American Geophysical Union (AGU) Conference 2025*, New Orleans, LA, USA, December 2025 (Submitted)
- "Passive Plasma Burst Detection and Inverse Localization System for Asteroid Surface Activity Monitoring", *International Workshop on Instrumentation for Planetary Missions*, Boulder, CO, USA, August 2025
- "Temporal Analysis of Martian Surface Features Using Orbiter Data", *American Geophysical Union (AGU) Conference 2024*, Washington, DC, USA, December 2024
- Boga, P., Sripennem, A. & Bonsi, A.N. Rotational curves decomposition of spiral galaxies using least square non-linear regression. Indian J Phys 97, 2577–2590 (2023). https://doi.org/10.1007/s12648-023-02655-6
- "New approach into understanding the correlation between solar activity and Sunspot Area (SSA)", *73rd International Astronautical Congress 22*, Paris, September 2022
- "Analytical Study of Dark Matter Mass Distribution Around Spiral Galaxies", *International Conference On Convergence Of Interdisciplinary Science*, Bangalore, February 2022

Awards and Activities

- Represented University of Colorado Boulder's Satellite Team MAXWELL at *38th Annual Small Satellite Conference, 2024*, Logan, UT, USA, August 2024
- Co-supervisor for a Satellite Team to assist in Design of a 1.5U CubeSat to LEO at SSERD, India - June, 2022
- Won First place in CAD Design Competition of SRM World Space Week 2021 - April, 2022
- Won Best Poster in "International Conference On Convergence Of Interdisciplinary Science". - February, 2022
- As a team, awarded Bronze medal in Tod'Aérs Space Sustainability Fellowship for work in Dark Matter Research. - July, 2021
- Won the 'Best of Nation' for "Space Systems Engineering" in the IV WorldSkills Russia University League Competition. - December, 2020
- Participated as team in the "Poster Challenge 2020" by Royal Astronomical Society (RAS) with 2 poster submissions. - November 2020