SOURAV GHOSH

Aerospace Engineer

Graduate Student at the Intelligent Space Systems Laboratory

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EDUCATION

2020 - 2024 | Jain (Deemed to be University), Bengaluru, India

Bachelor of Technology - **Aerospace Engineering** | CGPA 8.66/10

2024 - 2026 | The University of Tokyo, Tokyo, Japan

Master of Engineering - **Aeronautics and Astronautics** | GPA 2.82/3

MEXT Scholar (awarded by the **Japanese Ministry of Education, Culture, Sports, Science and Technology**)

Under the guidance of **Dr. Ryu Funase** and **Dr. Yosuke Kawabata**

EXPERIENCES

Team Avadhi - Jain (Deemed to be University)

Co-founder | May 2022 - January 2024

- Collegiate High Powered Rocketry Club
- Team lead of Avionics and Guidance, Navigation, and Control for Sounding Rockets.
- Also contributing towards Propulsion and Mission Design.
- Designed the Flight Computer and Control system for recovery systems.

Team Ardra - Jain (Deemed to be University)

Team Leader | August 2022 - April 2024

- Collegiate CANSAT Team participating in the IN-SPACE CANSAT Competition 2022-24
- Wrote the Flight Software
- Designed a PID Controller for the Reaction wheel control
- Systems Integration of the CANSAT

Human Space Flight Centre - Indian Space Research Organization

Project Intern | January 2024 - April 2024

- Completion of Bachelor's thesis under the guidance of Dr. C Geethaikrishnan, Deputy Director of HSFC, ISRO, and Mr. Gnani Ankathi, Scientist 'C', HSFC, ISRO.
- Work titled "A Comparative Study of Performance of Modern Lambert's Problem Solvers"

Graduate Researcher - Intelligent Space Systems Laboratory, The University of Tokyo

Researcher | April 2025 - Present

- Research on Space Debris Tracking, Cislunar and Interplanetary Mission Design, Astrodynamics, and Trajectory Optimisation.

PROJECTS

Team Aeros - Interplanetary Aerial Systems (IPAS) Challenge 2021

Completed | 2021

- Design a Martian UAV based on Design Requirements given by organisers
- Contributed towards Avionics systems

SAEIndia Aerothon 2023 - Control of a Vision Based Autonomous Quadcopter

Completed | 2023

- Implemented Autonomous Operational modes using PyMAVLink
- Implemented Computer Vision using YOLO-V8 for Object Recognition
- Flight Control Design using Pixhawk 2.4.8

Airborne and Space-borne Synthetic Aperture Radar Calibration using Corner Reflectors

Completed | 2023

- Calibration of SAR mounted on an aircraft flying at 10,000 ft.
- Calibration of SAR mounted on RISAT-1A

Agnibaan-1 High Powered Rocket by Team Avadhi

Completed | 2023

- Achieved Apogee of 2007 ft.
- Designed STM32F4 based Flight Computer
- Designed and Calibrated Static Thrust Test Stand for Solid Motor Testing

IN-SPACe CANSAT Student India Competition 2022-24

Completed | 2024

- Contributed towards FSW, TLM, Parachute Design and Recovery.
- Responsible for Integration of entire system.
- Responsible for Integration with Organiser's UAV Launch System.

PUBLICATIONS

Chandar, A.E., Phalphale, A., **Ghosh, S.**, Desai, S. (2021) '**Structural Investigation of Agricultural UAV**', International Journal of Scientific Research & Engineering Trends, 7(2).

Ghosh, S., Badgujar, S., Gyeltshen, T., Allamaprabhu, C. Y., (2024) '**Lunar Mission Design using the Three-Body Problem**', International Conference on Advances in Aerospace and Energy Systems 2024.

Ghosh, S., Sharma, P. S., Badgujar, S., Pundit, S., Nagesh, A., (2024) '**Characterization of Orbits in Cislunar Space for Space Traffic Management**', International Astronautical Congress 2024, Milan.

Varma, K., **Ghosh, S.**, Badgujar, S., Furtado, G., Puthiyadath, V., (2024) '**Constraints and Challenges in Guidance, Navigation and Control Architectures for Beyond Earth Orbit CubeSat Missions**', International Astronautical Congress 2024, Milan.

Maurya, R., Wischert, D., **Ghosh, S.**, et. al. (2024) **'Sailing Through Space: Advancing Space Exploration with Maneuverable Solar-Sailed Small Satellites',** International Astronautical Congress 2024, Milan.

Maurya, R., Wischert, D., **Ghosh, S.**, et. al. (2024) **'Conceptual Design and Feasibility Analysis of Maneuverable Solar-Sailed Small Satellites for Deep-Space Exploration and Communication',** International Astronautical Congress 2024, Milan.

Ghosh, S., Sharma, P. S., Badgujar, S., Pundit, S., (2025) '**Cislunar Space Traffic Management based on Operational Zones'** , 35th International Symposium on Space Technology and Science 2025, Tokushima, Japan.

Ghosh, S., Prusty, S., Kawabata, Y., Funase, R., **'Operations-aware Tisserand Graphs for Arbitrary Multi-Planet Chains'**, National Space Science Symposium 2026, NESAC, ISRO, Shillong, India. **- UNDER REVIEW**

CERTIFICATIONS

- **Rocket Propulsion** - NPTEL
- **Introduction to Launch Vehicle Analysis and Design** - NPTEL
- **Space Flight Mechanics** - NPTEL
- **Computational Science in Engineering** - NPTEL
- **Automatic Control** - NPTEL
- **Mechanics and Control of Robotic Manipulators** - NPTEL
- **Aerospace Materials** - Coursera
- **Kinematics: Describing Motion of Spacecraft** - Coursera
- **Kinetics: Studying Spacecraft Motion** - Coursera
- **Arm Cortex-M Processors Overview** - Coursera
- **AstroTech: The Science and Technology behind Astronomical Discovery** - Coursera
- **Introduction to Programming with MATLAB** - Coursera
- **Systems Engineering** - Coursera
- **Introduction to Experiments in Flight - IIT Kanpur Flight Laboratory, Feb 2023**
- **Rocket Systems Technologies - Indian Institute of Science, June 2024**

COURSES TAKEN (SELECTED)

- **Vibration of Elastic Systems** - Jain (Deemed to be University)
- **Control Systems Engineering** - Jain (Deemed to be University)
- **Flight Mechanics I and II** - Jain (Deemed to be University)
- **Introduction to Radar Systems** - Jain (Deemed to be University)
- **Operations Research** - Jain (Deemed to be University)
- **Aerodynamics** - Jain (Deemed to be University)
- **Aerospace Propulsion** - Jain (Deemed to be University)
- **Micromechatronics** - The University of Tokyo
- **Observation and Exploration of Planets and Earth** - The University of Tokyo
- **Remote Sensing Image Analysis** - The University of Tokyo
- **Advanced Energy Conversion** - The University of Tokyo
- **International Systems Design Workshop** - The University of Tokyo
- **Water Surface Waves** - The University of Tokyo and Seoul National University
- **Systems and Control** - The University of Tokyo
- **Analytical Methods in Mathematical Informatics** - The University of Tokyo
- **Special Lectures in Spacecraft Control** - The University of Tokyo