# **SOURAV GHOSH**

## **Aerospace Engineer**

## **Graduate Student at the Intelligent Space Systems Laboratory**

The University of Tokyo

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https://souravius1234.github.io

### **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.

## 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'**, 35<sup>th</sup> 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