About the Event

The Students Innovation Festival (SIF) - Space Hackathon 2023 is a thrilling extension of the broader Student Innovation Festival (SIF) initiative along with energy utilization in various fields, focusing specifically on the realm of space technology and exploration. Space Hackathon 2023 is a platform for you to merge your passion for space with innovative technology. Engage with like-minded students in the field of space exploration, encouraging them to think critically and come up with innovative solutions to real-world challenges leveraging space technology and receive mentorship from the Indian Space Research Organization (ISRO) NRSC experts, as you tackle real-world problem statements using the BHUVAN Portal. You will have the chance to push the boundaries of technology, gain hands-on experience, and potentially make your mark on the future of space exploration.

A series of space-related challenges are presented to participants, often from current issues in the space industry or scientific community. Satellite technology, space exploration, and space-based applications are some of the topics covered by these challenges. The festival typically includes mentorship, seminars, and keynote sessions with renowned scientists, astronauts, and space industry leaders. Valuable insights and inspiration are provided by these events. The chance to connect with like-minded individuals and potential future partners is available to participants.

BHUVAN Portal Orientation & Hackathon Mentorship

Unlike any other event, Space Hackathon 2023 offers a unique one-month mentoring program, which begins as soon as you register and compete. During this period, you will receive guidance on how to navigate the BHUVAN Portal, access geospatial data, and identify potential problem statements to work on. Your ideas will receive continuous feedback from ISRO NRSC experts, ensuring your projects are well-informed and impactful.

BHUVAN is the geo-spatial web portal developed by the Indian Space Research Organisation (ISRO) with a wide range of services that cover visualization of multi-date, multi-platform, multi-sensor satellite data, thematic maps, free data downloads, near real-time disaster services, apps for crowdsourcing and diverse geospatial governance applications.

BHUVAN is developed on Open-Source Software Tools and all its services are Open Geospatial Consortium (OGC) Compliance towards interoperability. Bhuvan conducted earlier hackathons and mappathons as one of the mediums to bring ideas and innovation from young minds.

Using the Bhuvan Platform, identify the problem statements from the list of problem statements available in Annexure 1 or the list of areas available in Annexure 2 and submit proposals for

further evaluation. The shortlisted teams based on the evaluation criteria are selected for the Space Hackathon Finale at IISF-2023.

Why Attend?

The Space Hackathon contributes to India's growing presence in the global space community by fostering interest and innovation in space science and technology. SIF- Space Hackathon 2023 challenges participants to leverage modern technology and space exploration, ensuring a sustainable future for our planet. The event is open to all enthusiastic Engineering students.

Note: For registration and submission click on apply.

The Journey

Registration

Registration will be for a team of a maximum 4 members with at least one female member, to embark on this incredible journey through the following links:

Registration links: https://forms.gle/z58w9VcEQci4N5Pr5

Hack2skill: https://hack2skill.com/hack/iisf-hackathon-2023

IISF Website: https://www.scienceindiafest.org

Problem Statements and Data Sets : https://bhuvan.nrsc.gov.in/hackathon/iisf2023/

Instructions:

- Go to the student innovation festival event and click on info for details.
- Click on Apply to upload your registration form signed by authorities.
- Final submissions will be allowed only after uploading your signed registration form.
- Visit the Hack2skill website for team formation and idea submission.

Bhuvan Orientation

Bhuvan orientation will help students get familiar with how to access Bhuvan including login details, access to data and navigation through the portal. Information about orientation sessions will be shared on the IISF website under the Students Innovation Festival event.

Mentoring

As you register and are selected for level 1, you may take advantage and guidance from the available mentors in understanding the BHUVAN Portal, how to make use of available data and completing the task. Mentorship will be provided to help students finalize their problem area/statement and approach. The mentoring program will continue up to 18th December after the registration process begins.

Problem Identification

Over the course of the mentoring period, you will identify space-related problem statements, you are passionate about solving from the list made available on the website. Discuss your ideas with ISRO NRSC experts/mentors to refine your approach.

Report Submission

Submit your project proposal by December 20th, 2023, on the IISF website. Go to the student innovation festival event page and click on apply to do so.

The finalists are required to carry an A2 size poster, detailing the problem statement, solution approach, and expected outcomes of level 1. The posters will be displayed at the exhibition during the grand finale at Faridabad.

Finale

Your submissions will be evaluated by experts and 50 teams will be invited to participate in the 30-hour Space Hackathon and the finalists will be awarded in the grand finale at the Indian International Science Festival (IISF), held from January 17th to 19th, 2024. The list of finalists will be declared by December 30th, 2023.

Note: Please visit the website regularly for the latest updates regarding the Space Hackathon 2023

Highlights

Problem Statements: Identify and work on real, challenging problem statements that you identify yourself.

Mentorship: Engage with ISRO NRSC scientists and engineers. Gain invaluable insights and guidance.

Access to BHUVAN Portal: Utilize the BHUVAN Portal to access geospatial data and satellite imagery for your projects.

Innovation Showcase: All shortlisted teams invited for the grand finale to bring an A2-size poster describing their problem statement and proposed solution. These posters will be showcased at the IISF-SIF 2023 exhibition to industry leaders, professors, and peers.

Networking: Connect with fellow students, professionals, and space enthusiasts who share your passion.

Recognition: Merit certificates will be provided to the winners and participation certificates to all other members.

Post-Hackathon Opportunities: ISRO will sponsor some projects/ideas where they see potential and provide funding

Description of Space Hackathon: The space hackathon is carried out at two levels.

Level 1: At Institute level (institutes from all over India)   **&**   **Level 2:** Finale at IISF

The duly registered team can select a problem statement list given in **Annexure 1** and submit the proposal to IISF. The team shall work on the problem statement to find out an optimum solution for the problem in an innovative method. The report shall be submitted to IISF as per the timeline stipulated in the subsequent section. IISF shall review the submissions and shortlist the 50 best teams for the Finale, which will be conducted physically at IISF, Faridabad from January 17th to 19th, 2024. The final winning teams shall be recognized and given an opportunity to interact with ISRO for further scaling up.

Eligibility criteria for participation:

Any student pursuing graduation in a recognized college/university within the country. A team of a maximum of 4 students with at least one female member can form a group and participate in the hackathon. The team shall submit one problem statement and solution using the tools and data from Bhuvan.

Selection criteria for Level 1:

All the groups duly registered online at the IISF website and submitted the registration certificate duly attested by the Head of the Institution / Dean / Head of the Department.

Selection Criteria for Level 2:

The following selection criteria shall be adopted for shortlisting the 50 best teams for the Finale at IISF-2023, New Delhi

- Nature of the problem statement and its relevance to the current developments
- The methodology adopted for finding out solution.
- Tools and data used for deriving the solution.
- Possibility of economic impact
- Scalability and adaptability
- Objectivity and deliverables

Mentoring Support

- The selected teams for Level I shall be given an orientation on Bhuvan for 2-3 hours.
- A team shall be available to mentor the students from the date of registration to the submission of solutions for the selected problem statement.

Logistic Support:

The participating teams shall submit the problem statements and solutions online. A participation certificate shall be provided jointly by IISF and ISRO for all the students, participating in the hackathon. The teams selected for the Finale shall come to Faridabad and 3AC train fare will be reimbursed to participate in the event. Accommodation and food will also be provided to all the participants of the grand finale. The logistics at Faridabad shall be arranged by IISF. The participants shall carry their own laptops, all required software/hardware and other accessories for participating in the Finale. Only an internet connection and sitting arrangement will be provided by IISF.

Finale:

- The event is a three-day event. On the first day afternoon (Jan 17, 2024), orientation shall be given to the students and any doubts will be clarified.
- On January 17th/18th 2024 the finale hackathon shall start and continue for 30 hrs. All the teams should come prepared for the event.
- The teams may be mentored during the hackathon and the submissions shall be reviewed subsequently by the Jury.
- The results will be announced in the valedictory session on 19th, 2024 and the certificate will be presented to winning team members.

Timeline:

Sr. No.	Event	Date	Remarks
1.	Registration Opens	15th November 2023	
2.	Mentoring	November 20th to December 18th 2023	For Level 1 problem statement submission
3.	Bhuvan Orientation	From November 20th 2023	For student guidance. The schedule will be displayed on the H2S Platform
4.	Final submission by teams for level 1	December 20th, 2023	Hackathon solutions are to be uploaded on the H2S Platform
5.	Publishing list of finalists for finale Hackathon	December 30th, 2023	Evaluators will shortlist the top 50 teams and publish the list on the IISF website
6.	Space Hackathon – Finale	January 17th to 19th 2024	

"Don't miss the chance to be a part of this incredible journey into the universe".

Register now and prepare to innovate, learn, and hack your way through the cosmos at the Students Innovation Festival Space Hackathon! 2023, Join us in making history.

Annexure 1

Problem Statements

1. Enhancing User Experience: Crafting Visually Engaging Service Visualizations for Diverse Sectors with Enhanced Page Responsiveness Through UI/UX Principles

2. Empowering Geospatial Exploration: An Innovative Online Processing Platform with Natural Language Scripting Capabilities

3. Unified Mobile App integrating into a common platform with latest state of the art technology.

4. Framework Model for Identifying, detecting and Report for Cyber Security on Bhuvan Portal

5. Uncovering User Behaviour Dynamics with Machine Learning algorithms

6. Voice-Activated Search Assistant: Revolutionizing Query Resolution through Conversational AI

7. Development of Bhuvan Generic framework using micro services architecture.

8. Heritage AR/VR Challenge: Preserving and Enhancing Cultural Heritage through Augmented and Virtual Reality

9. Optimal Geospatial Indexing System for India

10. Geospatial Game Creation - Satellite Image Guessing Challenge

11. Intelligent Data Catalogue

12. Data Redundancy Removal Algorithm

13. Data Dynamics using DL/ML over a time scale — A cluster/trend analysis.

14. Feature Extraction from RS-HR data using AI/ML

15. Radiometric Normalization on temporal data sets using DL/ML (multi resolution/ multi temporal)

16. High-Definition product of Night Time Light with DL/ML — data fusion between NTL and optical/SAR data

17. Social Impact Analysis using NTL data on various socio-economic factors.

18. Landscape Dynamics, Hotspot and Prediction

19. Aadhar Vista: Illuminating Paths for Strategic Centre Placement with Night Lights and Population Data

20. Land Use Land Cover Level-2 classification using AI/ML

21. Socio-economic impact of natural resource management

Note: The data sets will be posted on the BHUVAN website.

Annexure 2

Areas for the Problem Statements

1. Open API
2. User Interface
3. Geoprocessing
4. Citizen-Centric Applications
5. Impact Assessment of G-Governance
6. Supply Chain Management
7. Cyber Security / Data Security
8. Disaster Management
9. Virtual Assistants
10. Neighbourhood Mapping
11. Spatial Data Management
12. AI / ML Applications
13. Natural Resources Management
14. Satellite Data Processing
15. Marketing the Products and services

Contact details:

Coordinators

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Quick Links

Portal – https://bhuvan.nrsc.gov.in

Datasets – https://bhuvan-app1.nrsc.gov.in/2dresources/bhuvanstore.php

G-Governance Applications – https://bhuvan-app1.nrsc.gov.in/sitemap/

Handbook and Documents – https://bhuvan.nrsc.gov.in/forum/viewtopic.php?f=3&t=247

Problem Statements and Data Sets – https://bhuvan.nrsc.gov.in/hackathon/iisf2023/

Hack2skill – https://hack2skill.com/hack/iisf-hackathon-2023