

Provide a high-level summary of your project. What did you develop? How does it address the challenge? Why is it important?



PROJECT STATE PASA STARS PROJECT LEVEL SUMMARY

N/A

PROJECT DEMO

Challenge:
N/A

FINAL PROJECT

N/A

PROJECT DETAILS

N/A

PROJECT DEMO

3. Final Project

4. Project Details

Provide a short demonstration ("demo") of your project. Only include ONE link:

- Slide presentation (7-slides)
 If you include a title slide, it counts!
 OR
 - Video presentation (30-seconds)

Upload your demo to an external site (a cloud-based hosting service or code repository, e.g. YouTube, Google Drive, GitHub, One Drive, Dropbox, etc.) and provide a publicly accessible link.

Confirm it does not require a password, permission, or registration in order to access your project demo. Test it with non-logged in users to confirm public access.

TIPS ABOUT PROJECT DEMOS



"Demos" are often one of the first things that Global Judges look at to determine whether a project deserves additional attention.

Plan Ahead

Decide early whether to create a **video** or **slide deck**, and consider the question, "What story does my team want to tell?"

Delegate



Assign a teammate to lead the Demo creation.

Visual

Storytelling

There are two formats to submit your Project Demo. Regardless of which one you use, be sure to use strong visuals and ensure readability.

Restrictions



The video should be maximum 30 seconds; the slide deck should be maximum 7 slides.

Judging Criteria



 Projects will be evaluated using five criteria: Impact, Creativity, Validity, Relevance, Presentation.

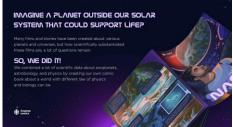
PROJECT DEMOS - SLIDE DECK TIPS





2023 - Team Quality over Quantity, Kaohsiung, Taiwan





Slide Tips

- Choose a template with readable font size and limit the number of words on each slide
- Incorporate strong visuals to help tell the story of your project

Your slides should include:

- Team Name; Team member names;
 Challenge
- Display an image of the project
- Describe the user experience
- Include how space agency open data and tech make your solution possible

2023 - Team Oogway Comics, Dushanbe, Tajikistan

PROJECT DEMOS - VIDEO TIPS



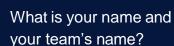






0:00 INTRODUCE

YOURSELF



0:02 LEAD US IN

What NASA
International Space
Apps Challenge does
your solution address?
What inspired your
team to choose this
challenge?

0:05 NAME YOUR

SOLUTION

Provide a title and tagline of your project to catch your audience's attention. What problem does it solve?
What do people gain?
Where is the opportunity?

0:10 DESCRIBE

YOUR IDEA

How does it work?
Display images or a
prototype (optional
screen share)
Describe a user's
experience.
How did using NASA data
make your solution
possible?

0:20 LOOK INTO

THE FUTURE

Paint a picture
What will your idea
change?
Captivate your audience

with what it could be.
What can your solution
do for people, the world,
and beyond?

0:30 End

Example Demo Project Demos



2023 - Team Space Bee, United States

Example Demo Project Demos



2023 - Team Storm Prophet, Kyiv, Ukraine

Example Demo Project Demos



2023 - Space Quest Maidens, Campinas, Brazil



LINK TO FINAL **PROJECT**

Share a publicly accessible link to your final project. Only include ONE link.

Upload your final project to an external site (a cloud-based hosting service or code repository, e.g. YouTube, Google Drive, Figma, GitHub, One Drive, Dropbox, etc.) and provide a publicly accessible link.

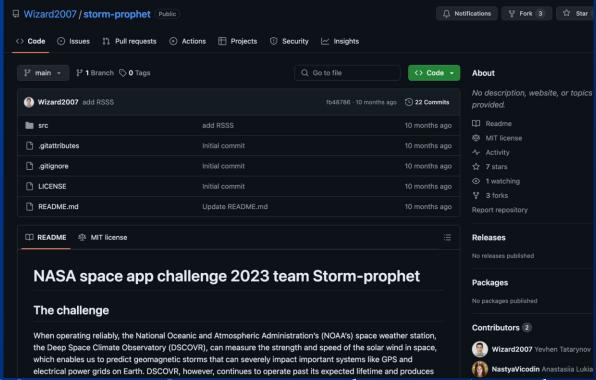
Confirm it does not require a password, permission, or registration in order to access your project demo. Test it with non-logged in users to confirm public access.

Example Final Project Links



2023 - Team Space Bee, United States

Example Final Project Links



2023 - Team Storm Prophet, Kyiv, Ukraine

Example Final Project Links



2023 - Space Quest Maidens, Campinas, Brazil





Provide additional details about your project. Some questions to consider:

- What exactly does it do?
- How does it work?
- What benefits does it have?
- What do you hope to achieve?
- What tools, coding languages, hardware, or software did you use to develop your project?





 Provide specific details about what AI tools (if any) you used - The answer to this question will not negatively impact the judging of your project.

- What NASA and NASA Space Apps
 Challenge Space Agency Partner data did
 you use in your project? How did you use it?
 How did it inspire your project?
 - You are also highly encouraged to use data or resources from the 2024 Space Apps Space Agency Partners





- List all of the data, resources, and tools used in your project. Resources should include any code, text, and images (even if they are open source or freely available) that you used when creating your project.
- Not all of the challenges require participants to engage with data in the same way. Some challenges may only ask that participants be "inspired" by the data. Others will ask participants to integrate the data.
- Suggested space-based data is provided for each of the challenges under the "Resources" tab



PROJECT SPACE APPS ALL-STARS

HIGH-LEVEL SUMMAR' REFERENCES

NASA in Your Neighborhood

- If you are using any copyrighted materials, make sure you have permission to use them.
- Any citation format is acceptable no specific citation style is required

Remember: You are welcome to use any open data in your project. However, to be eligible for a Global Award, you must use data or resources from NASA.

Example Project Submission Pages









2023 - Team Space Bee, United States

Example Project Submission Pages







This first image shows a relatively neat fit of standard deviation over time for 100 first hours from the 2017-2020 dataset. The second one shows a forecast of standard deviation over time for 100 first hours from the 2021-2023 dataset. One can notice that this last fit is its especies, most likely due to anomalies. A closer analysis needs to be performed to identify the exact correlations between the anomalies and economical cartivity.

USE OF ARTIFICIAL INTELLIGENCE

We applied several AI models (LSTM, Sequential tensor flow with different optimizers and loss functions) and data preparation algorithms (Permutation Feature Importance, Grouping Data by hours. Custom feature columns) to predict solar storm. Our LSTM model demonstrated high accuracy in its results. The long-term model exhibited a 3% deviation from the expected data, while the short-term model showed a deviation of 1.8%. We used a Sequence to Sequence model, which takes several hours of data from DSCOVR sensors as input and provides forecasts for hours/days ahead. These parameters can be adjusted during model setup. We tested numerous variations depending on the importance of criteria, how many input hours should be provided, and how many hours of prediction are expected as output. Both models exhibited high performance for the first 14 hours. Unfortunately, we couldn't test the minute-level model for longer durations as its assembly alone took 7 hours. However, thanks to our data improvement. the hourly model was assembled in less than an hour and showed a deviation of 3-5% from the expected values. This result allowed us to extensively test the hourly model and make predictions for up to a month in advance with the worst deviations reaching a maximum of 10% Also same method was used to investigate possible patterns in data anomalies. We have outlined our strategy to address anomalies in the dataset that occurred during the years 2021-2023, five years after the launch of the DSCOVR mission. Our approach involves training a reverse LSTM model using data from the anomaly-free period (2017-2020). We utilize DST and IMF features to predict Faraday cup detector measurements. By comparing our predicted parameters with the actual noisy data during the anomaly period, we can effectively detect and identify anomalies in the dataset in future. This method provides a valuable means of handling anomalies and improving the quality of our data analysis.

SPACE AGENCY DATA

. Develop the Oracle of DSCOVR - Experimental Data Repository

REFERENCES

- · Model source code & amp; web site repository
- · Long short-term memory wiki
- TensorFlow
- Random Forest
- Feature Importance
- · Library for visualisation on site
- · Python to run Al models and make plots
- DST data

2023 - Team Storm Prophet, Kyiv, Ukraine

NASA Space Apps 2023

Spacebee





About

Project

Members

AÓNIKENK

HIGH-LEVEL SUMMARY

Adnikenk (in reference to the indigenous people of Patagonia in South America, /a.o.ni keqk/) is a Web App for Lunar Data Visualization. Dive into the fascinating world of lunar exploration as you explore data surveyed by seismometers as well as information such as precise landing site data, surface temperature, topography and more! In the app, you can filter by date the lunar events registered by the passive instruments deployed during the Apolio missions between 1969 and 1972. You will find also time-series information about moonquakes. All this data is presented on a 3D globe representing the Moon and animated seismic waves on the locations of the seismological events. Adnikenk embodies the key traits of fidelity, accessibility, and networking, serving as a powerful means to connect individuals who share your interests. Therefore, the App includes a Web Speech API which contains the speech service to read information on screen. Are not you a lunar expert? Do not worry! An embedded chathot will help you with all your doubts regarding our celestial neighbor, do not hesitate to ask your questions in your language. Finally, you will find additional extras on the App, including: a 3D lunar simulator to have an inmersive experience of moonquakes, a link to deploy an augmented reality version of the App, and a form to submit your project.

PROJECT DEMO

https://youtu.be/vygmcA93Rnk

FINAL PROJECT

https://aonikenk.spacebeetech.com/

PROJECT DETAILS

We developed a web site (https://aonikenk.spacebeetech.com/) that integrates moonquakes data collected by seismometers deployed on Apollo missions. The web application uses the globe.gl library to render data visualization layers on a three-dimensional planetary object in spherical projection. This library is conveniently integrated with a ThreeJS/WebGL environment for 3D rendering. The application shows the registered moonquakes and lunar missions information, including moonquake locations, type of moonquake, date and data plots based on ALSEP Apollo experiments data. It also provides information about mission landing sites and even an integrated chatbot for additional consulting. The chatbot bases on GPT model and was integrated to the website using Zapler.

Data sliders can be used to filter the events, Lunar rotation rate can be adjusted manually, and day/night light is shown for a more realistic view. Team Member Registration is Closed.

Challenge

Make a Moonquake Map 2.0!

When they explared the Moon, NASA'S Apollos astronauts left behind several instruments to collect geophysical data near each Apollo landing site. Your challenge is to develop an app for the public that plots the seismic data these instruments transmitted back to Earth on an interactive 3-D digital moon globe.

Outline

- 1. High-Level Summary
- 2, Project Demo
- 3. Final Project
- 4. Project Details
- 5. Use of Artificial Intelligence
- 6. Space Agency Data
- 7. References



Example Project Submission Pages





J. Canva 2. Chait GPT

USE OF ARTIFICIAL INTELLIGENCE

We use ChatGPT to assist in our research on eclipses and in translating our texts into English.

SPACE AGENCY DATA

Eclipses

Nasa Eclipse Science

Types of Solar Eclipses

REFERENCES

ChatGPT

Solar Eclipse: How it Occurs

Eclipse Lunar

NASA Highlights

How often does a solar eclipse occur?

Lunar Eclipse Video

2023 - Space Quest Maidens, Campinas, Brazil

BEFORE SUBMITTING FOR JUDGING:



- Ensure that all team members are registered and identified on the team's Project Page.
- Teams will not be able to add new members after project submission has closed.
- Ensure that the project does not contain profanity or inappropriate language.
- Use English language on the project submission page, Final Project link and Demo Video or Deck
 - Exception: If your team chooses to create a video for the Project "Demo," you can speak in another language. However, it MUST include English language subtitles.

HOW TO SUBMIT THE PAGE FOR JUDGING:





If you have not completed all of the required sections on the Project page, you will not be allowed to proceed.

- Once you're ready to submit your project select "Submit for Judging"
- If your project was submitted successfully, a banner will appear at the top of your screen along with a confirmation message.

You may edit and resubmit your project as many times as you'd like until the end of the hackathon.

Only your last saved submission will be reviewed by the judges

HOW TO SUBMIT THE PAGE FOR JUDGING:





NASA reserves the right to disqualify nominations, awards, or winner status for any team in violation of these confirmations:

I have read and understand the program's submission requirements as contained in the **Space Apps 2024 Project Submission Guide** and the https://www.spaceappschallenge.org/legal/, and I fully agree to them.

I confirm that the submitted project represents my team's original work and that all external resources including code, text and images (even if they are open source or freely available) used in the solution are listed in the References field of the project submission form. In creating our solution, my team has not used any copyrighted materials (i.e., music, images, text, etc.) that we don't have permission to use.







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