

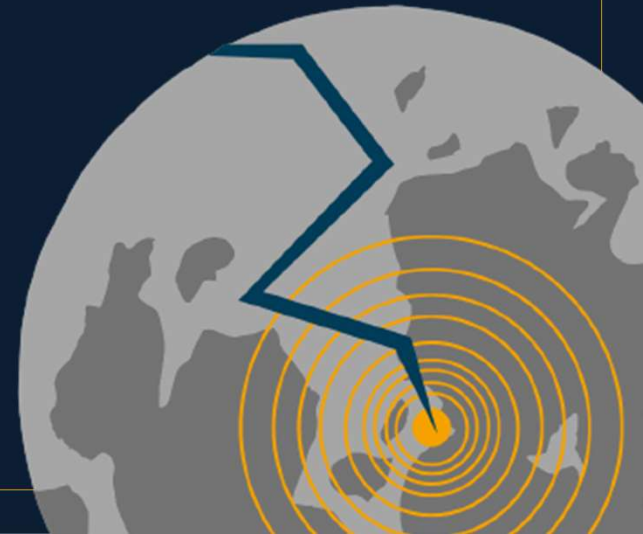
Lunar Quake presents...

MOONQUAKE MAP 2.0

Submitted: 08th October 2023

By: Mumtahir Farabi, Rafi Khan, Ximing Yu, Alif Chowdhury

Organizer: NASA International Space Apps Challenge 2023

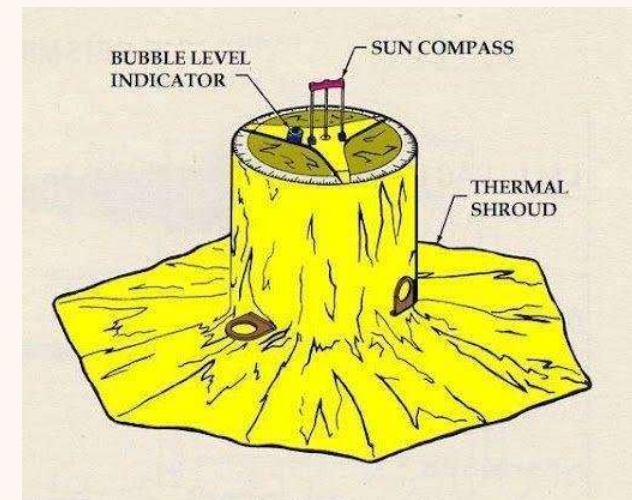
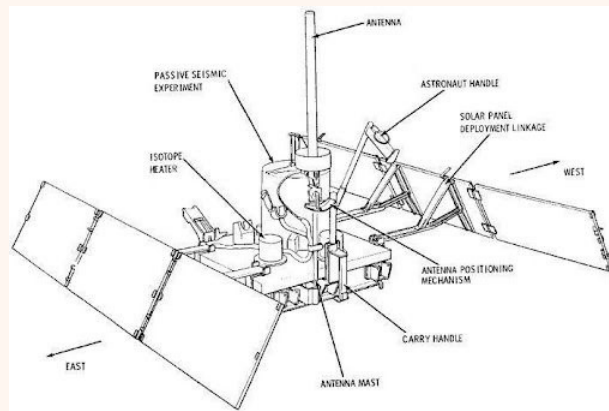


Introduction



THE CHALLENGE

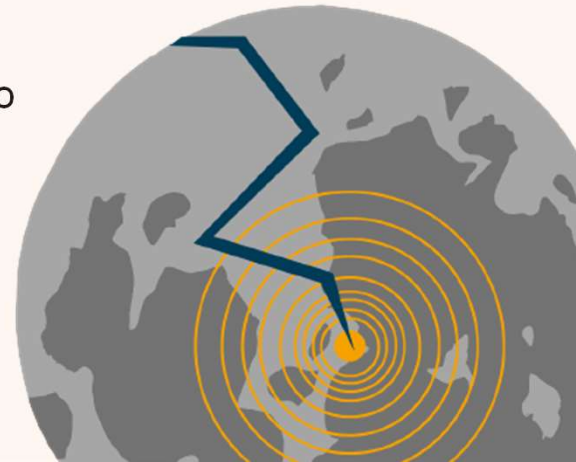
Apollo astronauts left several Passive Seismic Experiments (PSEs) on the lunar surface during the Apollo missions. These instruments were designed to monitor the environment of each Apollo landing site for at least a year after the astronauts departed. Your challenge is to develop an app for the public that plots the seismic events detected by these instruments on an interactive 3-D digital moon globe.



Considerations

CONSIDERATIONS

- **Visualization of the data**: As this is a public-facing project, it must present the data from the PSEs in a comprehensive manner, and made accessible to users across a diverse range of age and education levels.
- **Platform and tools**: the app must be easily accessible.
- **Interactivity from the user's perspective**: App must be made interactive to follow challenge guidelines but also to drive user engagement and facilitate further learning.
- **Data isolation**: App should ideally use available range of data and allow users to filter by area of interest.



Methodology



Data Analysis & Processing

For the data processing component, we used Python with JupyterLab on the Apollo Seismic Event Catalog from NASA's Planetary Data System (PDS) as analyzed by Nakamura.



Design and Development

The frontend of this web app was developed using react.js, three.js, nodeJS, and typescript. Design components (i.e. mock-ups and brand identity) were crafted on Canva. The app is currently in this phase of development.



Introducing Lunar Quake

Features



When finalized, the webapp will include:

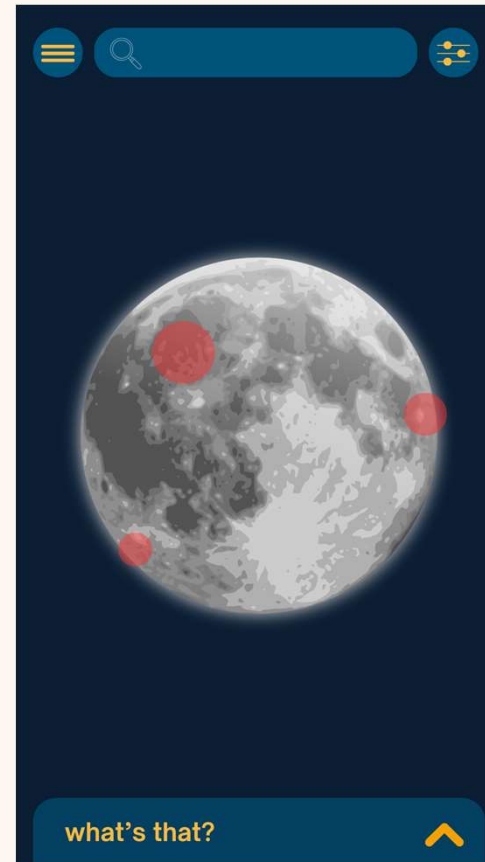
educational background on:

- the moon
- Apollo missions 11, 12 and 14-16
- lunar seismic activities

filters allowing users to search by:

- Location of event
- Duration of event
- type of impact
- Strength of event
- And more!

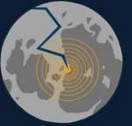
Main Interface (Finalized)



Feature Filters (Finalized)



Roadmap



Design and
Development



Testing &
Feedback



Final Product

With the app currently in its preliminary developmental stages, here are some enhancements that would further elevate this experience:

Further filtering capability

Increased device compatibility

Improved accesibility