Seismic Detection

Across the Solar System

Algorithms that can help identify and sort seismological events

Alpha Wolves

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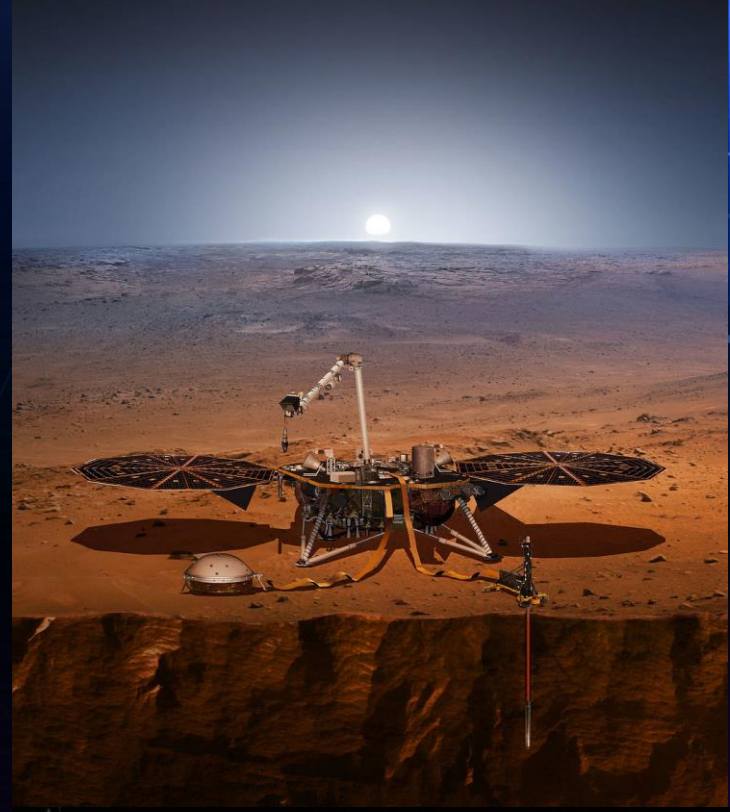
Data analysis based on the Apollo and Mars InSight Lander missions

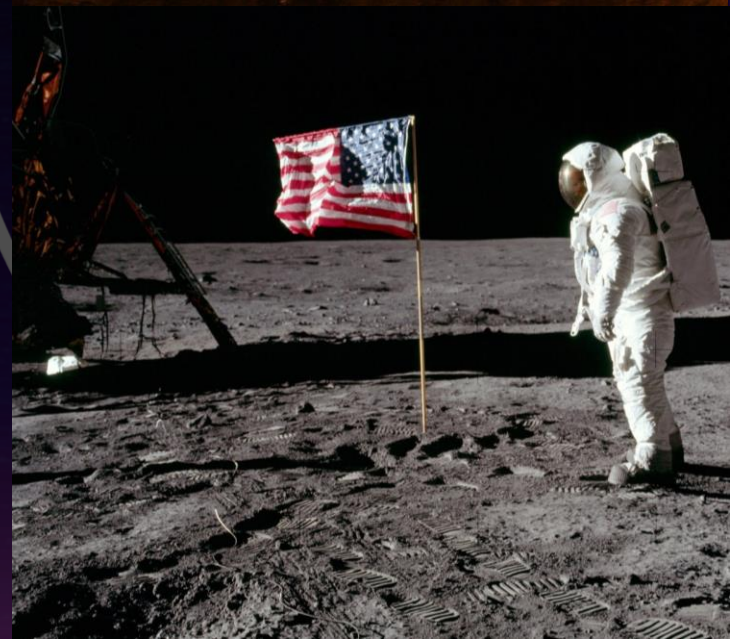
- **Challenge:**

We need seismic data from the Moon and Mars to protect connections and prepare sites for landing. Due to the large amount of energy needed to process them, performance must be taken into account, which involves external costs or algorithms that are only perceived by data such as an earthquake.

- **Solution:**

The solution proposed by our team is an algorithm that allows you to obtain the necessary data while maintaining the rover's energy efficiency and optimalized for real time operations.





Application of the algorithm

- Finding safe places to land
- Seismic vibration testing to select appropriate materials for the construction of space equipment
- Detect and analyze seismic vibrations and find guidelines to help predict quakes.
- Learning about the geological structure of the planet
- Preventing the destruction of space stations
- The analyzed data can be used for machine learning

System ekspertowy oraz system decyzyjny

Expert System

- Its task is to verify the type of threat resulting from planetary seismic activity based on the adopted assumptions
- It enables a quick response to specific seismological phenomena
- It allows the implementation of output data into machine learning algorithms

Decision System

- It involves analyzing seismic motion graphs and notifying the user in case of deviations from the norm

Simplicity in data processing

- Loading and Processing Data
- Filtering the Data
- Seismic Event Detection using STA / LTA Algorithm
- Plotting Data and Spectrograms
- Saving Detected Events
- Gathering results and verify the data

Sources:

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