
AUBURN WAVES
Summer of Innovation 2024
Hosted by Cosmosoc, Space Data
Science Club, IIT Dharwad

Introduction

Mars may be rusty red, but its landscape is far from boring! Volcanoes rise taller than Mount Everest, canyons dwarf the Grand Canyon, and vast deserts showcase both bright and dark sand dunes. Explore the giants like Olympus Mons, the solar system's champion volcano, or delve into the depths of Valles Marineris, a canyon system stretching for thousands of kilometers. The Martian surface is a treasure trove waiting to be unraveled.

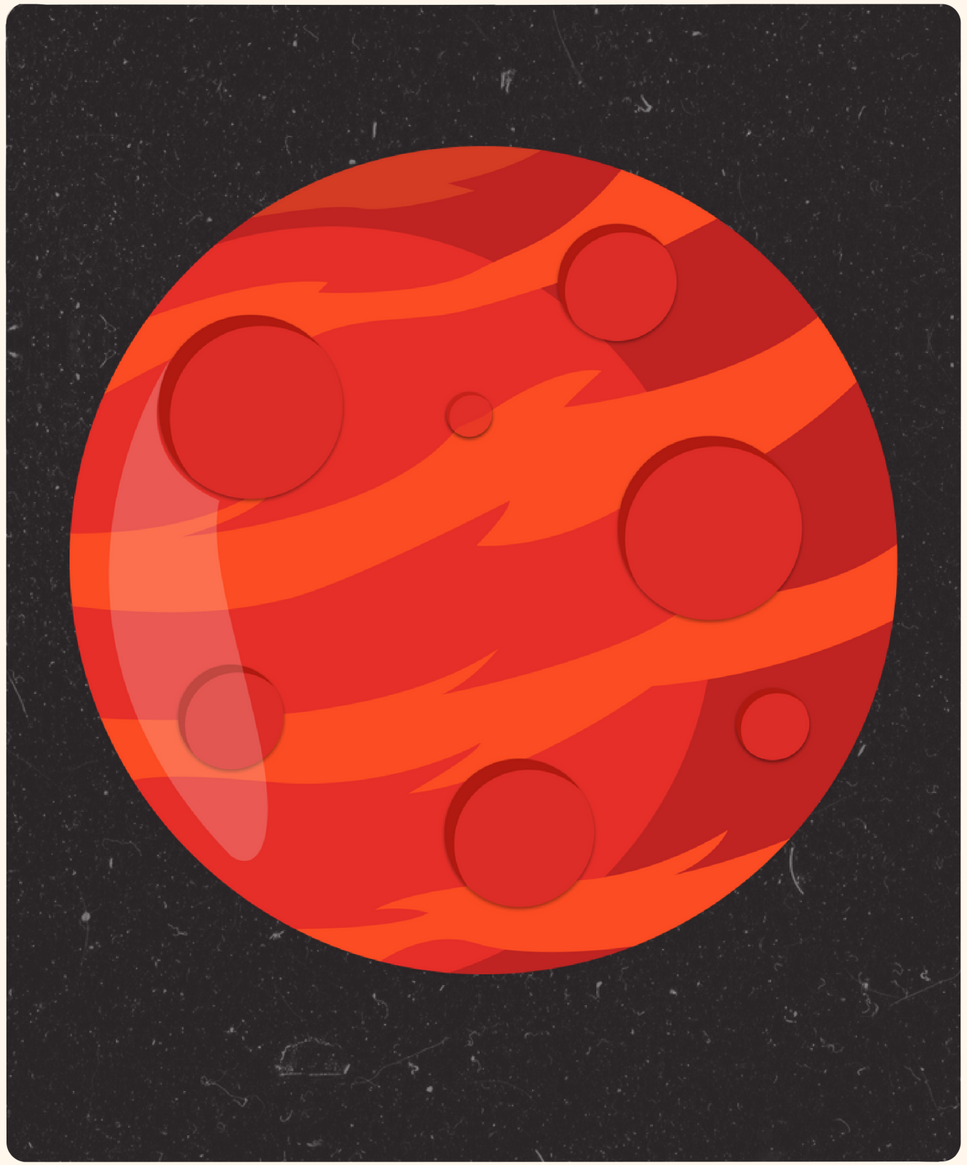
Estimating the absolute position of a lander, during the descent phase of a planetary exploration mission. A precise position estimation is required in order to avoid obstacles or to get close to scientifically interesting areas assessed on the basis of orbiter images.

Problem Statement

Task:
You have to develop a Machine learning model that identify which terrain it is in the given image.

Project Objective:

1. Develop Machine learning Model on the labelled Dataset.
2. Use the following trained Model to predict unlabelled data



NATURE OF DATA

You have been provided with two folders:

1. **train_dataset**
2. **test_dataset**

From train_dataset you have to train your ML Model and train.csv which have provided the labels of the image in train_dataset as which image represent which terrain, the following terrians:

1. Bright Dune
2. Dark Dune
3. Spider
4. Impact Ejecta
5. Slope Streak
6. Swiss Cheese
7. Crater
8. Other

EVALUATION CRITERIA

The Main Evaluation Criteria is going to be:

1. **Data Preprocessing**
2. **Model Selection**
3. **Accuracy**

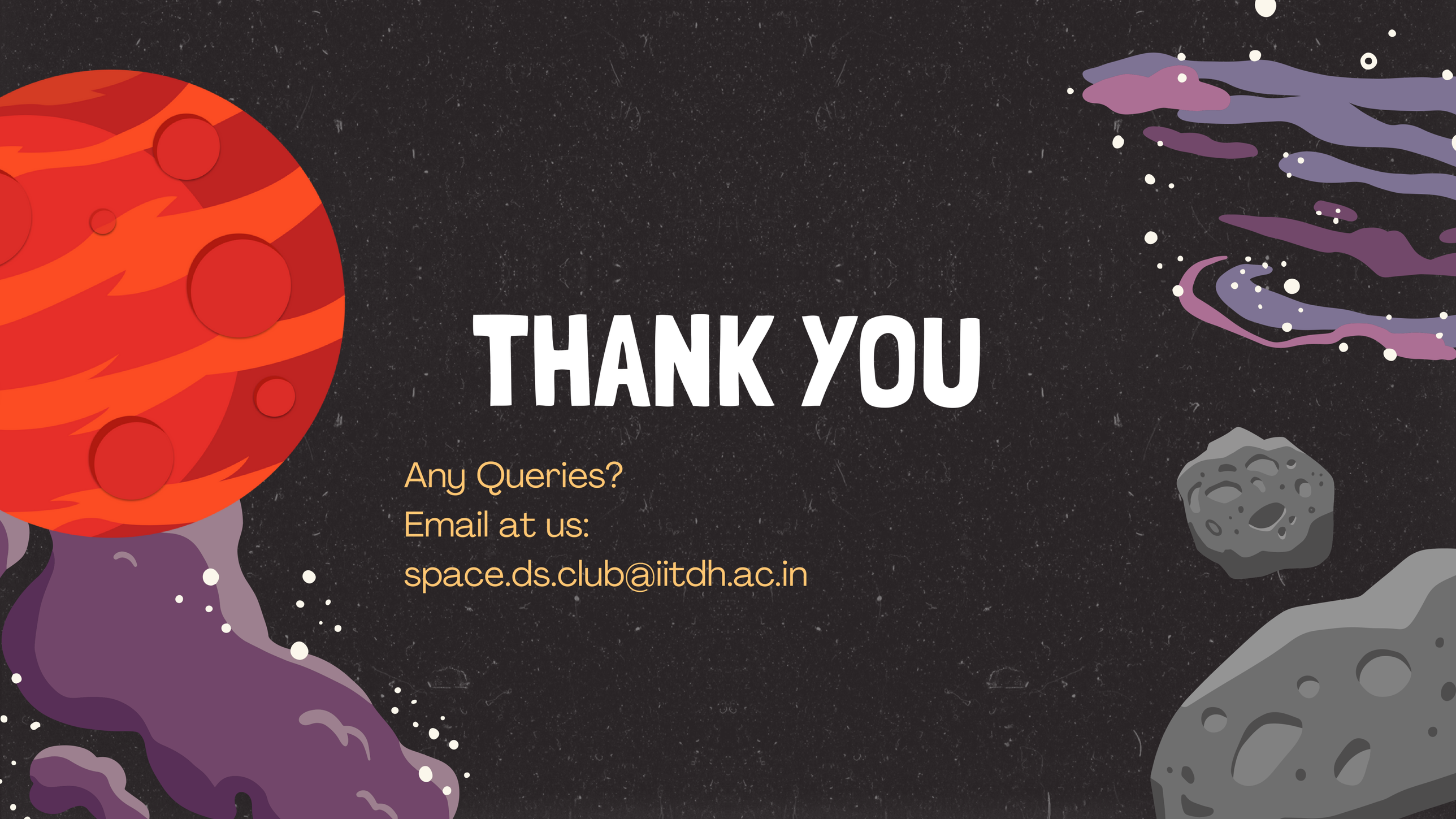
You have to use your trained ML Model to label the unlabeled image in **test_dataset** and that is going to be used in the Accuracy

Introduction

Report/Documentation(PDF)
The teams must create a concise report that includes the workings and outcomes (model performance) as well as their thought process throughout the project

Contribution (PDF)
The teams must create a contribution file which contain which team member have contributed to which part of the project. (If there is 1 Member Team for them no need to create this file)

Submission
The complete project must be submitted as a GitHub repository, which will include all the codes (preferably in Python notebooks), report, contribution and any other required file.


THANK YOU
Any Queries?
Email at us:
space.ds.club@iitdh.ac.in