**ROVER PROJECT 20**

DYNAMICS(POC)

Autonomy Team:

Domains: S

1. **GPS** (Language: C++ ,Concept: NMEA Protocol 0183)
2. **Image Processing**(Language: C++, Concept: Computer Vision)
3. **Dynamic Simulation of Planetary Rover**(Concept: Open GL, Data Science(Language: C++, Converting Data into regression type (Probability of textures in graph) graph and matrix representation graph))
4. **Software**(Language: C++)

**GPS Navigation**

1. The Rover will be able to traverse to required coordinates given as input in the form of **NMEA0183 GPS** sentence.
2. Travelling Error will also be one of the characteristics of the rover. It means that we can derive which is the longest path and which is the shortest path to the destination (Similar to Google maps ex: 2mins slower).

**Image Processing**

1. The Rover will be able to detect the given object as input.
2. The Computer Vision based Object Detection Algorithm it will be able to detect any object based on the given test cases.
3. Once detected the server station will give command to the rover to traverse.

**Mapping(Dynamic Simulation of Planetary Rovers)**

1. The rover will first map the terrain on which it will spend its operation time with the help of a Lidar sensor.
2. With the help of mapping we can detect the type of obstacle and its characteristics.
3. We can also locate the particular coordinates where the checkpoints are located.

**Software**

1. All the operations mentioned above will be integrated into a software which will help the user to control the rover motion and operations in a user friendly way.
2. It will contain a database where it will store the images, coordinates and other data extracted during the operation of the Rover.
3. Finally the software will move towards its testing part.