ROVER SPECIFICATIONS

The Rover consists of multiple parts that support its movement and functionality. They are Raspberry Pi, Camera, Lights, two wheels, caster wheel, LiDAR, and rechargeable battery. These parts provide the rover with the required agility during the exploration.

Rover Dimensions:
Length – 31.8 cm
Width – 15.7 cm
Height – 18.7 cm

Rover Weight: 2.34 pounds (Expected)

SLAM LiDAR

- LiDAR stands for Light Detection and Ranging.
- SLAM stands for simultaneous localization and mapping.
- LiDAR is also known as laser scanning which is used to measure the distance of various objects using a laser. SLAM is a system that simplifies the mobile mapping and data collection of large areas in much shorter spaces.
- There are multiple types of SLAM algorithms and approaches such as Graph SLAM, Fast SLAM, Topological SLAM, 2D & 3D LiDAR SLAM, etc.
- We use LiDAR SLAM to create a highly accurate 3D map of the insides of underground structures.
- The LiDAR sensor emits light waves into the surroundings to calculates the distance traveled by using the time it took for each light wave to return to the sensor.
- LiDAR collects millions of measurements points every second from which a 3D matrix environment can be created.

This mapping provides information about the position, size, and behavior of things.

References

https://geoslam.com/what-is-slam/#:~:text=What%20is%20LiDAR%20SLAM%3F,an%20active%20laser%20%E2%80%9Cpulse%E2%80%9D.

https://leddarsensor.com/why-lidar/