Test
Team I: Fall Validation Demonstration
Mission Statement
The Lunar ROADSTER uses the excavator to **groom multiple craters** and **create a circuitous path** around the Moon Yard.
Objectives
Demonstrate the rover's full implementation capabilities in a Lunar-accurate setting. This will include more ambitious tasks such as localization through visual odometry/star-sun tracker and circumnavigation around the Moon Yard.

Location	Planetary Robotics Lab Moon Yard
Equipment	Lunar ROADSTER rover, operations terminal (team laptop), LAN router, FARO laser scanner, star-sun tracker
Subsystems	Sensors, computations, external infrastructure, mechanical, actuation & electronics, electrical power
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Procedure

Prior Setup:

1. Prepare the Moon Yard with several craters and dunes in a circular path.
2. Scan the Moon Yard with a FARO Scanner to obtain a global map for navigation.
3. Attach and connect all the components and subsystems of the rover.
4. Place the rover in the Moon Yard and calibrate its localization using a star-sun tracker or visual odometry.

During Demonstration:

5. Turn on the rover and SSH into the Lunar ROADSTER docker on the operations terminal laptop.
6. Switch the rover to autonomous mode and run the start-up procedure.
7. Observe the rover autonomous grade craters and level dunes in a circular path.
8. After each dozed crater, use the ZED camera to validate whether the dozing satisfies the performance requirements.
9. If anything unexpected occurs press the emergency stop button.

Validation Criteria

M.P.1: Will plan a path with **cumulative deviation of <= 25%** from chosen latitude's length
M.P.2: Will **follow planned path** to a **maximum deviation of 10%**
M.P.3: Will **climb gradients up to 15°** and have a **contact pressure of less than 1.5 kPa**
M.P.4: Will **avoid craters >= 0.5 meters** and **avoid slopes >= 15°**
M.P.5: Will fill craters of **up to 0.5 meters** in diameter and **0.1m in depth**
M.P.6: Will groom the trail to have a **maximum traversal slope of 5°**