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PLAN AND PROGRESSION OF THE TECHNOLOGY READINESS LEVEL OF THE CUBEROVER

Abstract

Astrobotic is developing a lunar mobility platform known as CubeRover to revolutionize the way we explore and utilize the lunar surface. This technology is based on the concept of small, cube-shaped rovers that can act as a mobility service to transport payloads anywhere on the lunar surface once deployed from a lander. CubeRover is designed to be scalable to meet the demands of payload of various sizes, integrating within conventional CubeSat like form-factor volumes. The CubeRover's main application on the lunar surface is to tailor its mission based on the needs of payload customers such as resource mapping and localization, lunar infrastructure maintenance, mobile power transmission, and human-robot support. In the past years, there has been significant progress in the technical development of CubeRover, and it is now at a level to further mature the design to prepare for its inaugural flight in 2025.

This paper presents the latest progression in the CubeRover technology readiness level (TRL). This will include an overview of the design architecture and development of the CubeRover and its supporting

systems such as Astrobotic's wireless chargers since the start of the program along with the testing and validation performed on the rover following NASA's General Environmental Verification Standard (GEVS). Several lessons learned from the testing campaigns will be discussed along with future plans of the CubeRover development toward its first flight mission opportunity to the Moon.