

Mapping on Mars with Lidar-equipped Drones could Become a Reality



Lidar equipped drones may soon be mapping caves on the moon and Mars, according to the SETI Institute and Astrobotics Technology, a space robotics start-up.

Testing a terrestrial drone and Lidar system at the Lofthellir ice tube cave in Iceland, SETI Institute planetary scientist Pascal Lee said that caves in the lunar or martian environments could give shelter from inhospitable conditions on the surface: radiation, wide temperature swings and micrometeorite bombardment.

"We went to Iceland to study a lava tube with massive amounts of ice inside it to understand better both the potential hazards and opportunities presented by the many lava caves we hope to explore on the moon and Mars," he said.

Astrobotics was trialling its product AstroNav, employing stereo vision and Lidar, aimed at autonomously exploring and mapping subterranean environments without GPS or prior maps.

A lunar or martian drone would need to use thrusters, rather than propellers, but the Lidar sensor, autonomous control and scanning software could operate identically.

"Small free-flying spacecraft might be the ideal robotic platform for the exploration of lava tubes on Earth, the moon, and Mars for the simple reason that they would not need to come in direct contact with any of the rough and potentially unstable surfaces found inside caves and lava tubes," said Andrew Horchler, director of Future Missions and Technology at Astrobotic. "Nimble drones could enter, map, and exit caves quickly, returning from the darkness to send data back to Earth, return a sample to the surface, recharge and refuel."

The results of the Lofthellir trials were presented at the 50th Lunar and Planetary Science Conference, 18-22 March 2019, Houston, Texas.