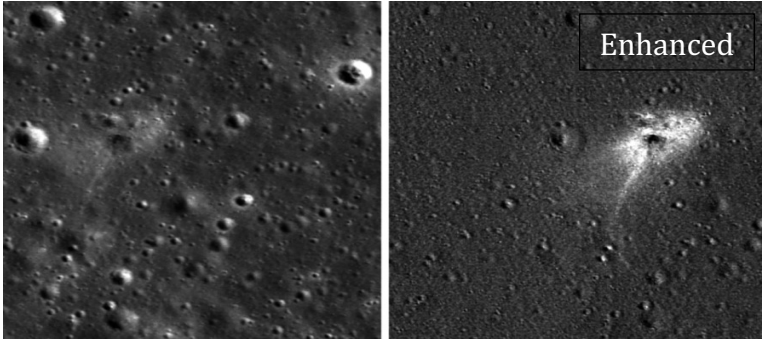




LANDING ZONE STRATEGY FOR LUNAR BASE CARGO TRANSPORT

BACKGROUND

When the Israeli lunar lander Beresheet crashed into the moon earlier this year (April 11, 2019) after a thruster failure, it impacted the surface early, and ejected debris in the direction of the intended landing site.



What are efficient ways to protect a crewed lunar base from failed cargo-vehicle landings?

Considerations:

- Cargo vehicles should be easily able to demonstrate human life on the surface of the moon will not be endangered. Otherwise cargo missions become expensive and riskier for cargo transport vendors.
- A lunar habitat, transport vehicle, or other landed structure is necessarily light-weight and vulnerable to projectiles.
- Layout of the base may be considered. What needs to be transported, and what can stay where it lands? How can the transportation be practical?
- Use of moon natural features may be considered.
- Regolith-moving luna-forming vehicles may be considered. Roads, berms... What would size, weight, and power of vehicle would be practical?

PROBLEM/DESCRIPTION

The objective of this project is to propose and explore novel concepts for layout of a simple lunar cargo transport campaign, free of specific mission constraints. This project should produce and evaluate several cargo transport architectures options.

DELIVERABLES: trade studies, mockups, videos showing proposed concepts

DESIGN TEAM PROFILE

NASA MENTOR:	Chatwin Lansdowne
LEVEL:	Upper Division Students [SOPH/JR/SR]
MAJOR / DISCIPLINES:	All Engineering Majors
TEAMS:	Mentor may accept more than one team
DURATION:	Two-Semester Project

