

## Autonomous Robots Traversing Extreme Environments

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Exploring extreme terrain is pertinent for extraplanetary surface exploration and search and rescue missions here on Earth. These high-risk operations are best carried out by autonomous robots, minimizing harm to humans. In this talk, I will describe the difficulties associated with robots traversing extreme terrain and proposed an autonomy architecture. The robot follows an encoded procedure of objective synthesis, path planning, adaptive dynamics modeling, and control policy generation. I will expand upon each of the procedural steps in the robot's autonomous exploration algorithm and tell this robot's story in the context of a lunar surface mission seeking ice. I will then extend these methodologies to ocean robot exploration.