

PUFFER (Pop-Up Flat Folding Explorer Robots)

PUFFER (Pop-Up Flat Folding Explorer Robots) is a current Game Changing Development Program effort developing origami-inspired folding robots with extreme terrain mobility. PUFFERs are low-volume, low-mass, and low-cost robots for high-reward extreme terrain science. Multiple folded PUFFERs could be included as a secondary payload on future missions. The parent platform would release one or more PUFFERs near interesting, but otherwise inaccessible terrain. PUFFER then expands and explores. PUFFER could image stratigraphy on steep slopes by using its low center-of-gravity and high, image features of interest with a ground-facing microscope, and transmit the images to the parent platform for relay to Earth. PUFFER could also evaluate microenvironments in confined spaces. For this scenario, PUFFER folds to drive beneath features such as rock overhangs where it can measure temperature and radiation levels using environmental sensors. Beyond this basic instrument suite, PUFFER looks to incorporate instruments of high science return that need to be taken to areas outside of traditional mission scope.

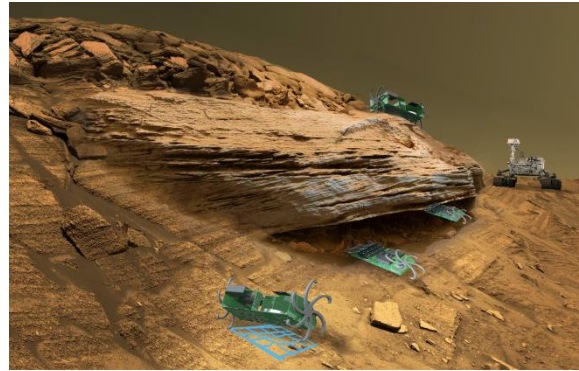


Figure. 1. Illustration of multiple PUFFERs exploring overhung rocks on Mars.