

Smart sandbag for autonomous lunar construction

NASA's Artemis program aims to establish a sustainable human presence on the Moon, vital for future missions to Mars. Overcoming lunar construction challenges, particularly in the harsh environment, requires innovative solutions. Smart sandbags, equipped with multifunctional sensors, play a crucial role in solving these lunar challenges. These sandbags assist in location estimation, orientation and positioning for robots during assembly, leveraging interplanetary CubeSat-class microprocessors that can also be used for a distributed network. By integrating smart sandbags into a prototype sensor network alongside autonomous robots, a promising solution emerges. Currently, multiple prototypes are being tested to see the effectiveness of these sensor networks deployed in smaller sandbags. Future iterations will focus on refining these sandbags for real-world adaptability, offering a significant advancement in lunar infrastructure. This innovative approach not only facilitates lunar construction but also paves the way for human exploration beyond Earth's orbit.