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Author: Mr. M.omar ALBALBAKI
Blinc- Borderless lab, Jordan

Mr. Subhi Rabi
Blinc- Borderless lab, Jordan

TESSELLATED ORIGAMI FOR MAXIMIZING POWER GENERATION IN SPACE EXPLORATION

Abstract

this paper explores the application of tessellated origami art principles to enhance power generation capabilities in space exploration. the utilization of tessellated origami shapes for folding solar panels is investigated as a means to maximize surface area and optimize the angle of sunlight, thus increasing power generation efficiency for cubesats and satellites. drawing inspiration from the mars spirit robot, which showcased innovative deployment mechanisms, this research seeks to develop similar techniques for efficiently deploying tessellated origami solar panels. through meticulous folding techniques and engineering design, this approach aims to unlock new possibilities for powering scientific experiments and operations in space. as a mechatronics engineer students and space enthusiast, we are motivated by the challenge of adapting origami art to advance the frontiers of space technology. this paper contributes to the exploration of novel methods for maximizing power generation and underscores the potential of origami-inspired solutions in shaping the future of space exploration.