Hao Chen

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3:00-4:00 pm
https://psu.zoom.us/j/93543835672

Space Logistics and Multi-Mission Space Campaign Planning

ABSTRACT

As low-cost rocket launch technologies and space resource utilization systems emerge, human space exploration is attracting increasing interest from industry, government, and academia. To extend the domain of human activity beyond the low-Earth orbit and maintain a long-term human presence in cislunar space and eventually Mars, we need to build a sustainable and affordable interplanetary space transportation system. It requires a campaign-level perspective for space mission design in addition to the conventional mission-level perspective. This talk will discuss novel methodologies to take into account mission interdependencies in multi-mission space campaign planning. Multiple case studies for human lunar and Mars exploration campaigns are conducted leveraging the proposed methods and frameworks to demonstrate their value and potential impacts. This research resolves the grand challenge of space logistics mission design through concurrent optimization of space transportation scheduling, spacecraft sizing, and space infrastructure deployment planning.

BIO

Hao Chen is a Ph.D. Candidate in the School of Aerospace Engineering at Georgia Institute of Technology. His research interests are space logistics and space system optimization. His research focuses on the development of mathematical optimization frameworks to resolve emerging challenges in space logistics and policy, enable space resource utilization, and stimulate space commercialization. He is currently a member of the AIAA Space Logistics Technical Committee. He received a B.S. degree in applied and theoretical mechanics from Sun Yat-sen University in 2014, a M.S. degree in aerospace engineering from the University of Illinois at Urbana-Champaign in 2016, and is expected to receive a Ph.D. degree in aerospace engineering from Georgia Tech in 2021.