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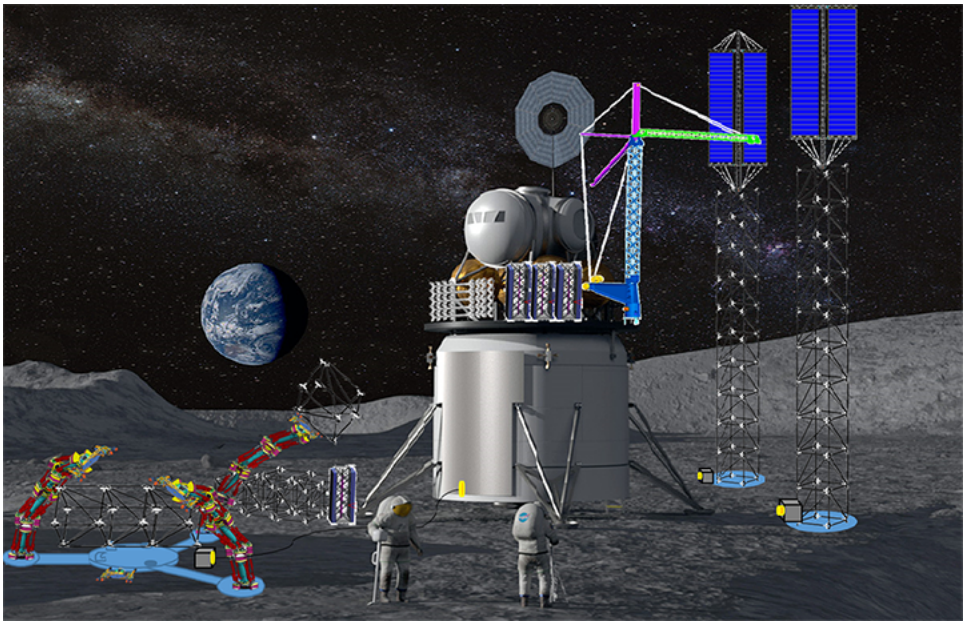
# Robotic Assembly Activities at NASA Langley Research Center

*John R. Cooper*
*NASA Langley Research Center*

## Abstract

Over the past several decades, NASA Langley Research Center (LaRC) has developed a suite of hardware and software capabilities for robotic in-space assembly. Specific robots include the Lightweight Surface Manipulation System (LSMS), Tendon-Actuated Lightweight In-Space Manipulator (TALISMAN), NASA Intelligent Jigging and Assembly Robot (NINJAR), Strut Assembly, Manufacturing, Utility & Robotic Aid (SAMURAI), and most recently the Assemblers modular robots. Alongside the hardware, software tools such as the Autonomous Entity Operations Network (AEON) and the Baseline Environment for Autonomous Modeling (BEAM) have been developed to enable communication and simulation respectively. These tools have supported foundational research in single and multi-agent control, sensing and perception, trajectory generation, task allocation, and human-machine teaming. This talk will provide a broad overview of these capabilities and go into detail on recent developments made by the Assemblers project to create modular, reconfigurable robots for autonomous in-space assembly.



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