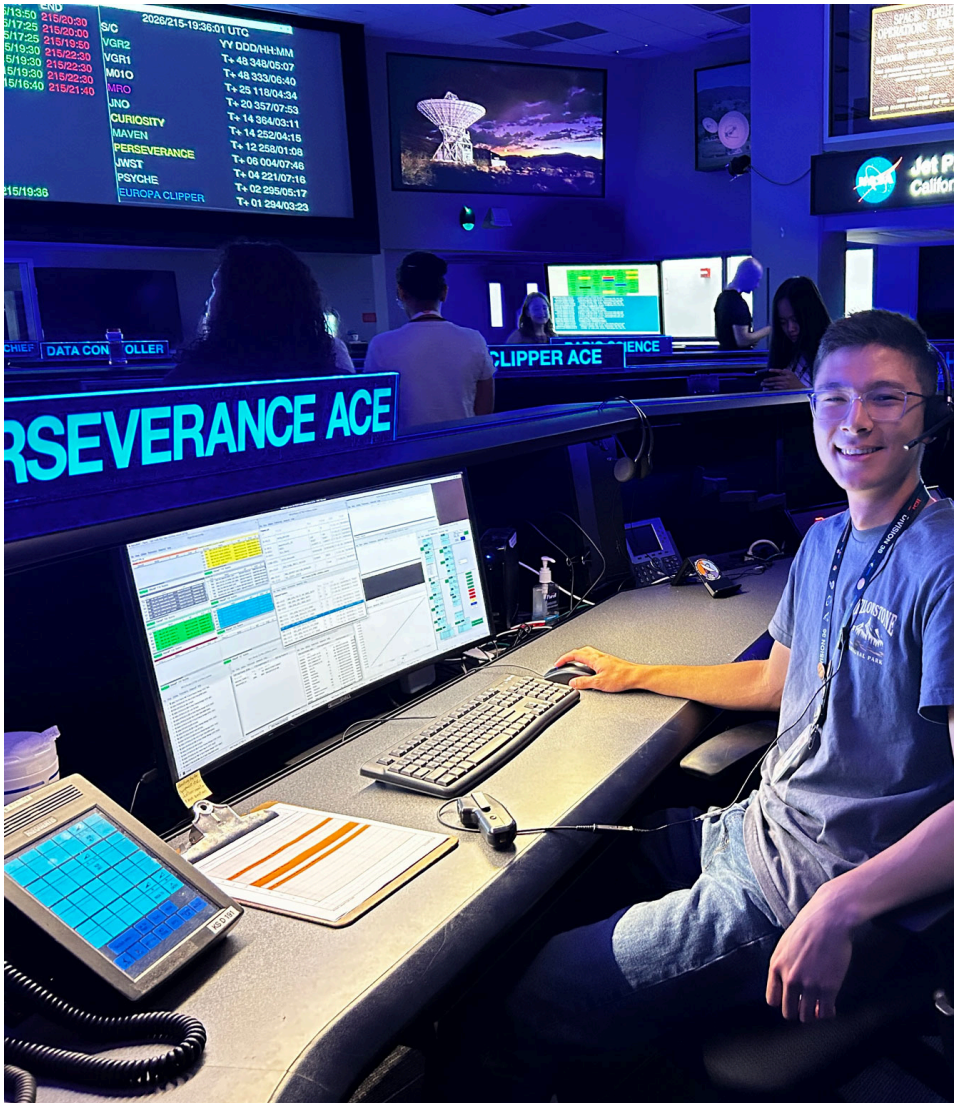


USU Student Conducts Satellite Research at NASA Jet Propulsion Laboratory Internship

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Space continues to offer countless opportunities for research, with questions about technology, innovation and the future of exploration waiting to be solved. In pursuit of answers, one Utah State University student got the opportunity to investigate a strategy that could advance data collection in space.



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Josh DaBell, a USU mechanical engineering student, earned a spot as a 2026 intern at the NASA Jet Propulsion Laboratory, known as JPL.

During his 10-week internship, DaBell worked with his mentor, Lin Yi, a technical supervisor of JPL's Advanced RF and Optical Technologies Group, to formulate his own independent research project.

Building on Yi's previous research, DaBell focused on researching data collection methods for a large set of small, low-cost satellites, known as a CubeSat swarm, using modulating retro reflectors. These reflectors are attached to the CubeSats, receiving and reflecting a laser beam while encoding data for transmission back to the laser base station. His goal was to investigate if a narrow, steerable laser would be more efficient than a wide-angle laser.

His research found that a steerable laser, for a typical CubeSat swarm in low-earth orbit, achieves about a 30% higher data rate at a power level around 166,000-times lower than what's required for a wide-angle laser.

Through this experience, DaBell's key takeaway was understanding the challenging process of forming and executing a research project from scratch.

"It's a very valuable skill - to look at something, see the actual problem and create a process to find a solution," he said. "That's really what I learned and is what I'm looking forward to as I continue pursuing research."

DaBell credited his undergraduate research experience for preparing him for the internship.

"This topic about lasers and optical communication was very new to me," he said. "My undergraduate research at USU helped me understand how regularly communicating with your mentor and presenting information is helpful."

Concluding his internship, DaBell compiled his work into a publication he will present at the IEEE Aerospace Conference in March 2027.

Looking forward, he hopes to attend graduate school to continue his research in mechanical engineering.

The JPL internship opportunity was sponsored by the NASA Utah Space Grant Consortium.

"Experiences like NASA internships give Utah students the chance to gain hands-on experience, build professional connections, and realize that a career in space is within their reach," said Kim Olsen, the associate director of the Utah NASA Space Grant Consortium.

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Writer: Libbie Anderson, libbie.anderson@usu.edu, 435-797-8361

Contact: Kim Olsen, kim.olson@usu.edu, 435-797-0496