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CORNELL UNIVERSITY SMALLSAT MISSION DESIGN SCHOOL: PILOT PROGRAM REPORT

Abstract

Cornell University launched a pilot interdisciplinary SmallSat Mission Design School during the summer of 2021. This program allows students the opportunity to design a realistic scientific mission and to present the design to experts for review and feedback. The goal is to provide an integrated learning environment, with direct mentoring from specialists in each field, and develop realistic designs for future mission proposals.

NASA and other space agencies are increasingly adding small satellite programs to their flight opportunity portfolios. These present exciting opportunities for teams to develop innovative mission concepts. Successful mission design and execution requires teamwork and communication across several disciplines. Students working through the Summer School benefit from working through a full design program where each person takes on specific role within the team. Each student receives specialty instruction to fit their role, and they must come together in a culminating week of intense activity to produce a closed mission solution.

Mission objectives are based in real scientific efforts, and upon further development, may result in future flight projects. Guests from industry and government organizations will lecture on topics to supplement those covered by the Cornell University faculty. The students in the pilot program come from the Cornell graduate and senior undergraduate cohort. Eventually the school aims to be externally facing, with students around the world able to participate remotely and in person.

The school also aims to teach the students effective science communication across a range of audiences. Students will learn to translate the mission objectives and importance to audiences ranging from technical peers to legislative sponsors. Additionally, the SDMS program seeks to develop a diverse cohort of students to broaden the pipeline into the industry.

Our presentation will discuss the integration of our program with each aspect of the satellite design program, the feedback we received in our pilot year, and the opportunities we foresee in moving from remote learning to hybrid engagement in future offerings.