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DEVELOPING SOFTWARE FOR THE LUNAR PLANTS HABITAT PROJECT

Abstract

The main goal of the lunar plants habitat project is to demonstrate germination of plants in lunar gravity and radiation environment. Scientists and engineers at NASA Ames will send a small payload module designed to place minimal requirements on the host spacecraft to show the potential for plants to grow on the moon in 2015. The goal of this research project is to investigate the early stage of plant development in an automated closed loop system that can be used to support human exploration of the Moon and Mars. The purpose of the work described here is to collect sensor inputs and output commands, timeframe and data downlink constraints to turn into a program and to test it out with every hardware component of this project. The software consists of taking pictures, checking radiation, pressure and CO2 sensors and payload temperature, and changing temperature of the payload if necessary. The functions are executed in a loop at different time intervals during operation over one lunar day. The software will also command the pump to add water to our habitat once the payload has landed on the Moon. All the data collected is stored for downlink to a ground station. Our main priority is to use the software's correlation of the radiation information with images of seed growth to gather critical part of our science data.