Team PLEASE

May Status Report

HASP

Activities of the Team:

Team leader Josh Frick accepted a job position and has left the group. Joel Taylor is now the team leader. A new team member, Ryan Gueho, has been added and will start in a couple weeks. His primary role will be to assist Joel in the completion of the project when needed. Ryan will head the data analysis, specifically, development of an algorithm to calculate the centroid and deconvolve the balloon motion.

All hardware for the camera subsystem has been ordered except the lens. The hardware consists of the camera, Triggertrap, filter, and various electronics to connect these. The lens has been selected and ready for purchase. The camera selected was a Nikon D3200 24.2 MP DSLR. Testing with the previous 3.3 MP camera has demonstrated with a 24.2 MP camera and a 109 degree lens, desired accuracy can be achieved. Using the D3200, testing has begun to find optimal settings for flight. Testing is being done with the original Baader film box setup.

The GPS shield has been completed by Brad Ellison of the electronics shop. The original GPS code is being revised to be compatible with the new subsystem. Once this is finished, the GPS subsystem will be complete and operational, ready for integration.

Arduino code has been written to read the analog voltage form the tiltmeter. An issue occurred in reading the voltages due to the tiltmeter being biaxial, outputting ±2.5V. The 10 bit ADC in the Arduino does not accept negative voltages so a circuit has been designed to shift the output of the tiltmeter up 2.5V resulting in a 0-5V output. The completion of the circuit will result in the tiltmeter subsystem be operational and ready for calibration/integration.

The structure for flight has also started being designed. The structure consists of a housing for the camera and a meth od of aligning the CCD to be perpendicular to the HASP plate. Aligning the CCD will be accomplished by creating an array of lights that will be leveled above the CCD. Theoretically, the ratio of the distance between the lights should be identical on the CCD itself. The housing of that the camera is in will have hand cranks at the lens that can move the camera very finite amounts until this ratio is seen in the CCD. Once the CCD is perpendicular to the plate, it will be locked into place. The tiltmeter will be calibrated on the plate so that is reads 0.0V.

Preliminary PSIP comments have been received and are gradually being worked on.

Problems Encountered

Memory limitations seem to be an issue with the large picture sizes of the 24.2 MP camera. Further testing needs to be done to determine what settings can be used to decrease memory limitations.

Milestones Achieved:

Completed GPS subsystem

Hardware selected so testing can begin

Current Team Members and Demographics:

Members: Joel Taylor

Faculty Advisor: Michael Cherry

With Guidance From: Michael Stewart, Gregory Guzik, Winston Capps, Chin Chang, Brad Ellison