

Team PLEASE

October Status Report

HASP

Activities of the Team:

The primary activity for week 1 of October was to improve the algorithm for locating the centroid of each picture. This included making the analysis more accurate as well as faster. I also focused on being able to analyze and plot many images together. My final task of this week was to gather the GPS data of HASP and of HADES.

During week 2 of October with the help of Nicholas Chason the goal was to determine any distortion in the images that may have been caused by the wide-angle lens. There were 2 methods used. The first was a rough approximation used while trying to find a mathematical formula that could perform the task. The visual method was to take a picture of concentric circles of increasing radius with the image centered on the center of the circles. A computer was used to draw circles over the image to look for distortion.

During week 3 a formula was found that could give the angle of any given point in an image. I began to manipulate the formula to be able to find a point for any given angle; the goal being to be able to adjust each centroid for the known tilt at the time of the image.

During week 4 I continued working on the algorithm to adjust each image for the known tilt. I **have found an algorithm that can adjust an image's centroid for a given amount of tilt in the x and y axes.** The next task is to be able to read in the list of all tiltmeter measurements and apply them to the correct image.

Problems Encountered

**The primary problem encountered was to be able to compensate for the distortion caused when using a wide-angle lens for photography. The formula being used to determine the new centroid based on tilt corrects for the distortion as well because the point given is done as a fraction of the total CCD length in the given axis.**

Milestones Achieved:

Increased efficiency of centroid locating algorithm.

Found a formula and wrote an algorithm to correct the centroid calculation for tiltmeter measurements.

Compensated for expected distortion of the wide-angle lens used.

Current Team Members and Demographics:

Team Leader: Ryan Gueho

Faculty Advisor: Michael Cherry

With Guidance From: Michael Stewart, Gregory Guzik, Ching-Cheng, Michael Cherry, and Nick Cannady