ARKSAT-1 Cube Satellite Proposal

Karshin Luong
Kyle Davison

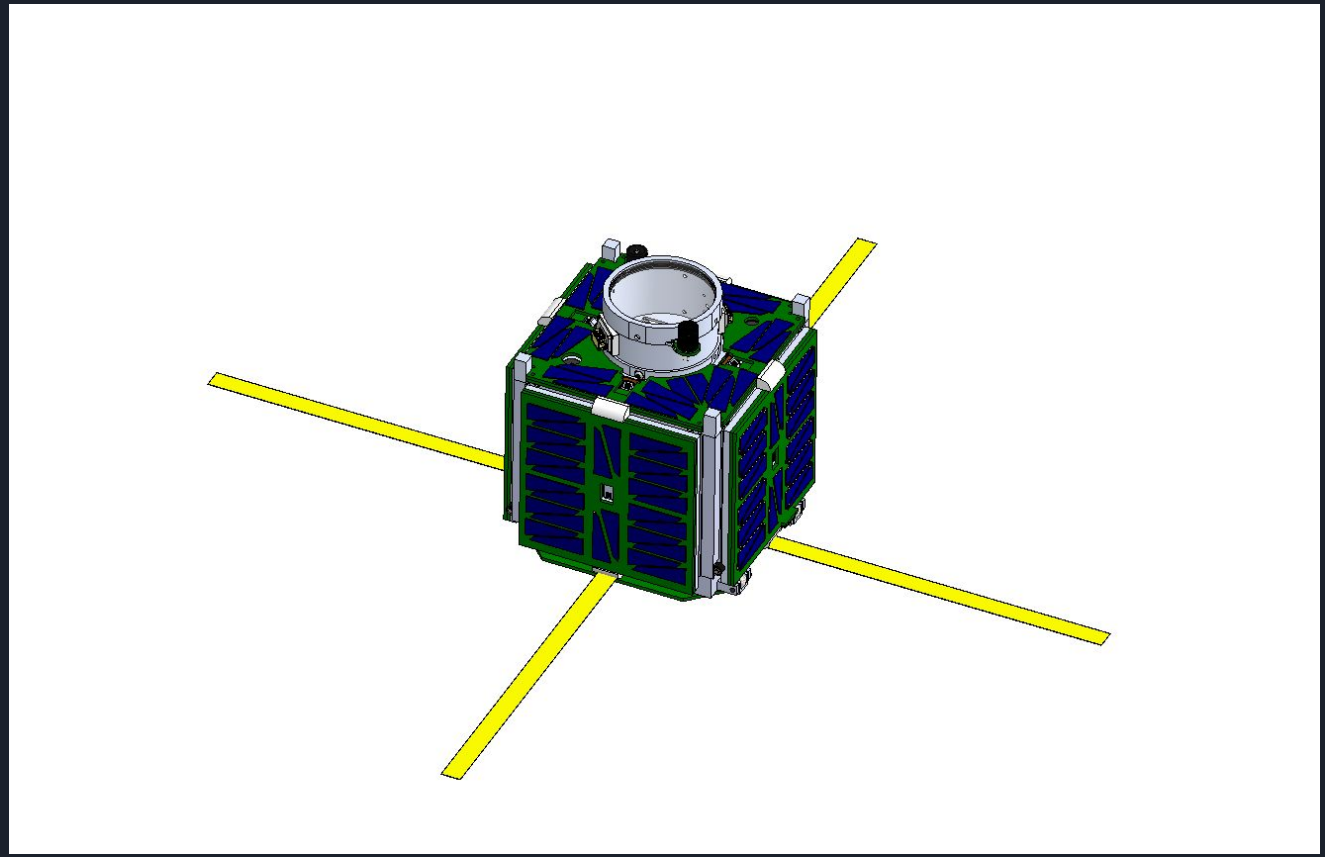
Problem/Objective

Problem: Can we detect an LED from space and see it through a telescope from Fayetteville?

Objectives:

- Create a functional cube satellite that will be able to detect and shine a high powered LED pointing towards fayetteville.
- Provide data and experience for future cube satellite missions.

Satellite Design



Electronic Design Goals

- Satellite electronics will communicate through SPI or I2C protocol. These are standard serial communication protocols that allow us to communicate with multiple microcontrollers at once.
- Sensors and cameras will transmit data received to a main controller.
- Microprocessors will interact with magnetorquers and orient the satellite.
- Maincontroller will transmit data through radio to receive back on Earth.

Tasks

- Learn about the electronic components in the design. PIC microcontrollers use PICBASIC and Arduinos use a version of C.
- Learn about the I2C protocol used to communicate between controllers and pass data.
- Learn about SPI protocol for communication between higher resolution camera and hardware.
- Develop code for communication between sensors and PIC controllers.
- Develop code for communication between arduino and PIC controllers.
- Develop code for orientation of satellite.
- Develop code for centering satellite camera towards the Earth.
- Develop code for pinpointing Fayetteville.

Schedule

Become familiar with relevant technologies	10/1 -11/1
Develop code for PIC and Arduino Communication	11/1 - 11/15
Develop code for PIC and sensors communication using I2C	11/16-11/30
Develop code for Arduino and Camera communication using SPI	12/1-12/31
Develop code for orientation of satellite	1/1 - 1/31
Add ability for satellite to find Earth	2/1 - 2/29
Add the ability for satellite to pinpoint Fayetteville	3/1 - 3/31
Perform safety and reliability tests and optimize design	4/1 - 4/30