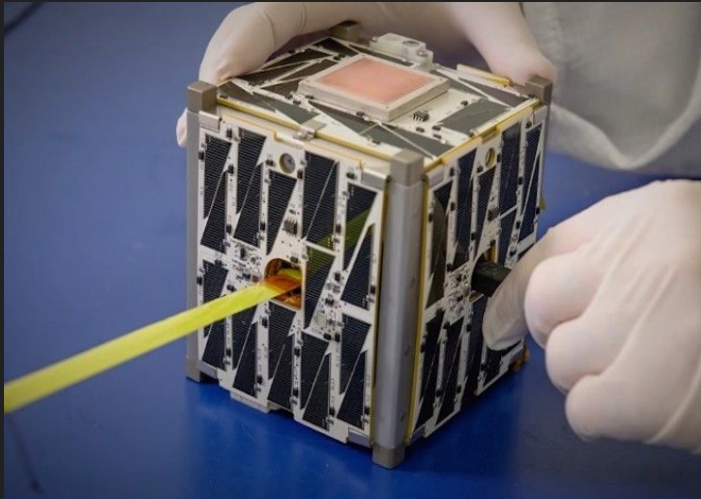


# ARKSAT-1 Cube Satellite



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# Why a cube satellite?

- Opportunity to be the first launched cube satellite in Arkansas
- Gain experience in a professional research and development group
- Learn more about aerospace and how NASA operates

# A Brief History

- Dr.Huang has been working on the design and application process for almost 2 years now
- Fall 2019 was the first real development phase after finally being approved for a launch date
- ARKSAT-1 is being developed alongside ARKSAT-2 which will be much more ambitious in functionality if ARKSAT-1 is successfully launched
- Nanoracks is the assisting company for both missions

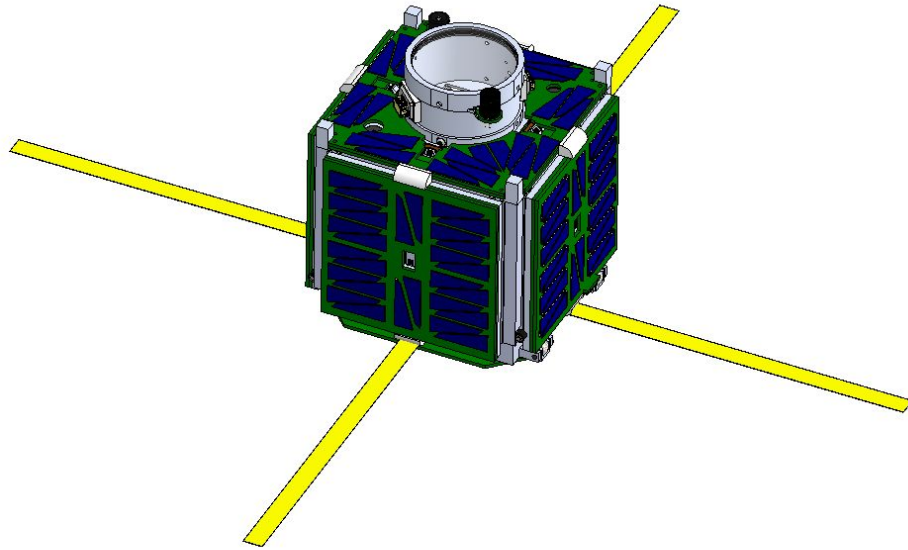
# Goals

Primary Objective: ARKSAT-1 must be able to pinpoint Fayetteville and be able to point a high powered LED towards the city in which we will attempt to locate on Earth with a telescope.

Secondary Objectives:

- Test a deorbiter system developed earlier by members of the NASA Ames Research Center.
- Provide documentation of the R&D process for future reference and gain experience in the process.

# Satellite Design



# Electronic Design Goals

- PIC Microprocessor will communicate with Arduinos using UART
- Sensors and cameras will transmit data through I2C, SPI, and UART
- Maincontroller(EMS) will need to communicate back and forth with processors
- Maincontroller(EMS) will send and receive data/commands from our ground station

# Challenges Faced

- Breadboarding and hardware requirements
- Changing requirements from NASA/Nanoracks
- Lack of information related development of cube satellites
- Difficulty finding information about programming with our microprocessors
- Coronavirus preventing further development and pushing back the launch date

# Work Done

- Developed code to have all sensors and cameras communicating with an Arduino
- Successfully had UART communication between two Arduinos
- Created example program to store pictures take from on board camera onto SD card
- Developed parts of PIC to Arduino and PIC to PIC communication via UART



# Future Work

- Finalize circuit board design and begin soldering on components
- Combine and develop code to work for the system as a whole
- Finalize a storage system for sensor data
- Develop a communication protocol for radio communication

