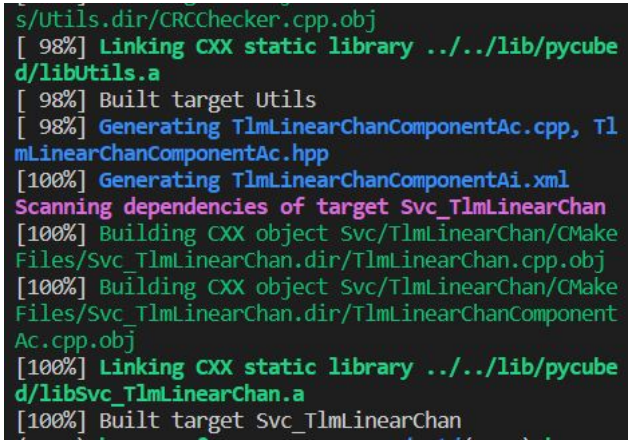
Avionics Week 6 16/18-873F23



Successfully compiled FPrime for PyCubed

Blockers

- None

Requirements

- Keepouts for camera on solar boards

Weekly Results

- Integrated toolchain to compile FPrime for ARM device
- Battery board verified and ordered

Next week

- Flash one of the Pycubed boards with FPrime (need toolchain to output executable)
- Implement a blink test on Pycubed board using FPrime
  - IMU data
- Develop and order torque coil boards

Interfaces

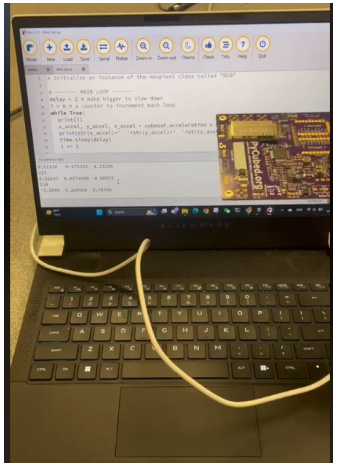
Vision: Software support for interfacing with cameras using Jetson. 6 Camera HAT board discussion.

GNC: Get GNC setup to start developing flight software

Ops: Develop RFM interface on FPrime

Mech: Deployables, solar cells, mounting holes

Avionics Week 5 16/18-873F23



Collecting IMU data: https://drive.google.com/file/d/1Q1CBaLEFpnNZ1WbjKNR-YIwaFHFr0KiW/view?usp=sharing

Blockers

-

Requirements

- Mechanical: Need to know internal layout of cameras so we can adjust board designs

Weekly Results

- 2 more PyCubed assembled and powered successfully
- Basic example codes tested - NeoPixel, IMU

Next week

- FPrime onboarding, run FPrime on PyCubed
- Start development of Solar Cell/ Magnetic torque coil board.
- Start development of battery board.

Interfaces

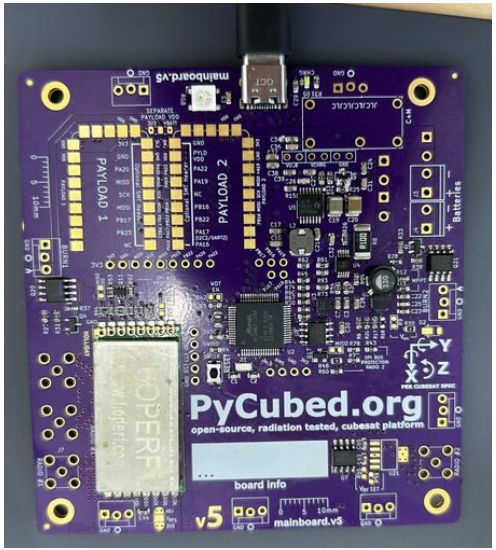
Vision: Software support for interfacing with cameras using Jetson

GNC: F' meeting

Ops: F' & RFM meeting

Mech: Internal layout, deployables, solar cells

Avionics Week 4 16/18-873F23



Blockers

- Camera selection for hardware development

Requirements

- Actual compute module power consumption

Weekly Results

- First PyCubed assembled and powered successfully
- Updates to power budget

Next week

- Initial interfaces test on PyCubed module.
- Build 2 more PyCubed boards.
- Start designing Camera/ Solar and magnetic torque coil boards.
- Evaluate off the shelf/ design the Carrier Board for Jetson compute Module.

Interfaces

Vision: Communication interface with ML module and control module

GNC: Meeting about software stack

Ops: Meeting about software stack

Mech: Fitting all six cameras with telephoto lens inside the CubeSat (PCB outline and arrangement)

Avionics Week 3 16/18-873F23

Block Diagram V1.1

Blockers

- Waiting for the PyCubed board to arrive
- Parts selections for more accurate power budget estimation

Weekly Results

- Created initial estimated Power Budget for major components
- Created more Fleshed Out Block Diagram
- Did initial Research on PyCubed Software Stack and F Prime Flight Software
- Started Designing the Drivers for Magnetic Torque Coils

Next week

- Select software stack - CircuitPython or F Prime
- Talk with GNC Team about dividing Software Work
- Build pycubed boards for initial integration testing.

Interfaces

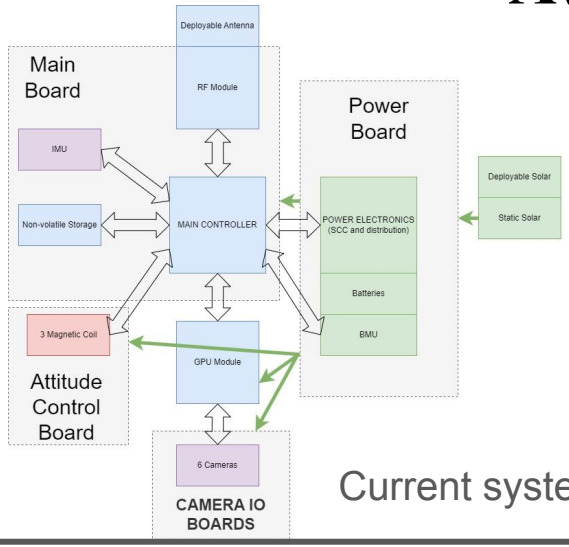
Vision: Compute module(s?) and camera selection

GNC: Division of software work, torque coil specifications

Ops: Develop command and data list for transmission

Mech: None

Avionics Week 2 16/18-873F23



Current system block diagram

Blockers

- None

Requirements

- Camera and Processor specs from vision team
- IMU and Coil requirements from GNC team

Weekly Results

- Created block system level diagram
- Discussed with all other teams about primary requirements
- Updated requirements

Next week

- Get PyCube board running and run simple interface code with available sensors or other boards
- Solar estimation to determine whether we need deployable panels
- Power source and drain calculations with burst usage availability

Interfaces

Vision

- Camera and Processor Specs
- # of cameras and duty cycle

GNC

- Power consumption of magnetic torque coils
- Orbit estimation for determining solar power, comm time

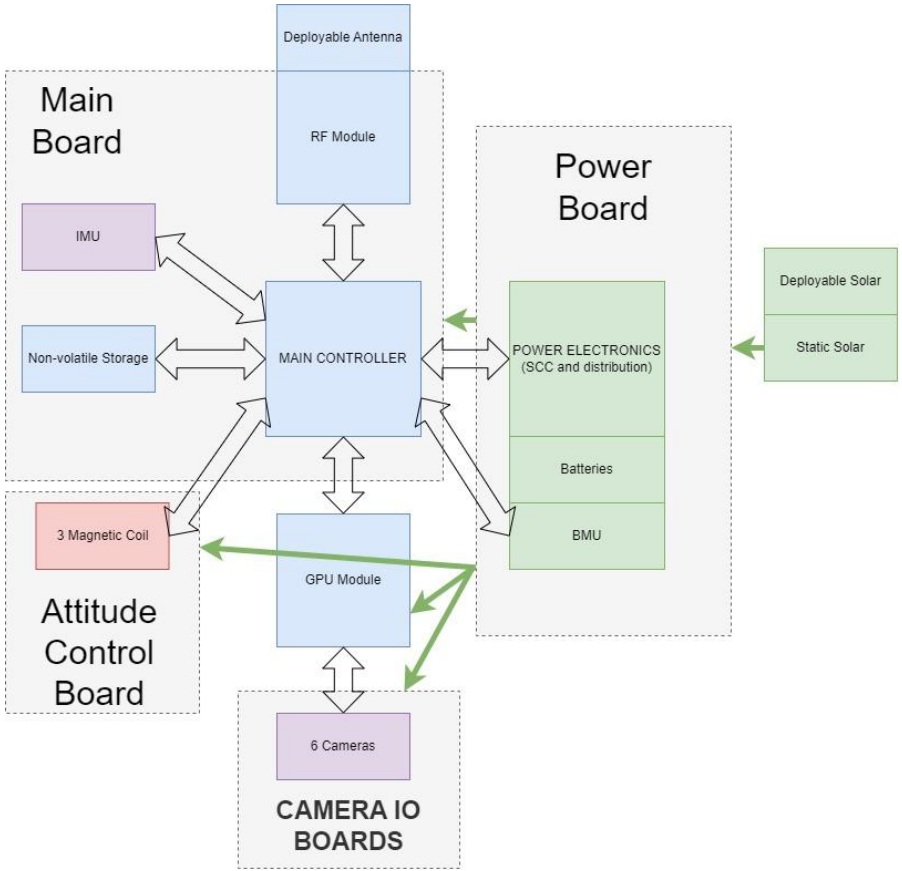
Ops

- Data input and output
- Detailed power consumption for RF Module

Mech

- Board dimensions and mounting options
- Deployable Switches

Hardware Block Diagram



Avionics Week X 16/18-873F23

Blockers

-

Weekly Results:

Next week:

Interfaces

Vision

GNC

Ops

Mech