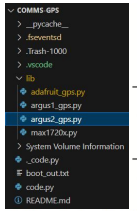
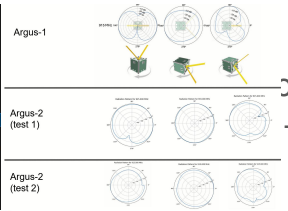
10/23/2024

Updates

- Radiation pattern with and without chassis:
- GPS driver in progress
- Studied the argus-1 code for data transfer.
- Came up with sequence diagram for data transfer.
- Reached out to radio club to access HH roof to set up GS
- Database system design:
  - Google Cloud Storage (Bucket)
    - store Images
  - Google Firebase (Firestore)
    - store metadata, querying feature, finding records by timestamp, location, or other fields





Database System Workflow

Image Capture and Storage:

1. **Image Capture:** Satellite captures an image and transmits it to the ground station.
2. **Cloud Upload:** Ground station uploads the image to Google Cloud Storage, selecting either the Nearline or Coldline storage class based on access needs.

Metadata Entry:

1. **Metadata Logging:** After the upload, metadata such as timestamp, satellite ID, and image URL is entered into Firestore for organized retrieval.

Occasional Access:

1. **Metadata Query:** Queries are made in Firestore using parameters like satellite ID, date, or location to find relevant metadata.
2. **Image Retrieval:** The image is then accessed from Google Cloud Storage via the provided GCS link for processing or viewing.

```
{
  "image_id": "123456",
  "satellite_id": "satellite-A1",
  "timestamp": "2024-10-23T14:00:00Z",
  "geolocation": { "latitude": 37.7749, "longitude": -122.4194 },
  "resolution": "1920x1080",
  "image_url": "gs://satellite-project/images/satellite-A1/2024/10/23/123456.jpg"
}
```

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Upcoming

- Make one (1) more extra antenna
  - We lost a soldier during anechoic chamber testing
- Ridge test
- Testing GPS driver
- GPS simulation to verify LEO operation
- Start working on Tx software for SAT and GS.
- Populate the new GS board.
- Start building on campus GS.
- Explore and implement the database system with Firebase.

Interfaces

- Avionics: Need a functional mainboard that the unlocked GPS can be mounted to, difficulty here is that that board will need to be dedicated to solely unlocked GPS use