Space Systems Lab Firmware and Safety Verification

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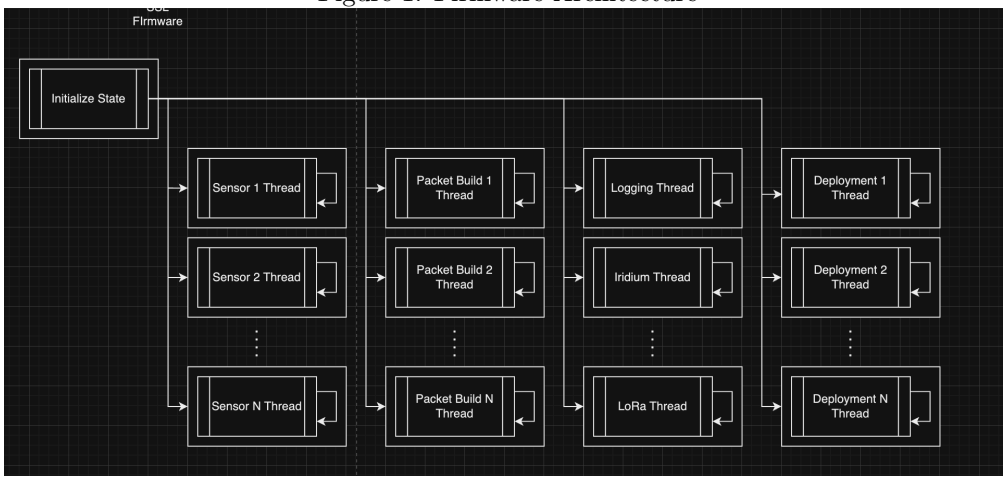
1 General Requirements

This software is to support the KRUPS missions. The current mission is KRUPS Aboard Norwegian GhostSat (KANGS).

2 Architecture Design

The firmware's framework is designed to be modular and configerable for each mission and each hardware.

Figure 1: Firmware Architecture



3 Kentucky Flight Computer (KFC) Requirements

4 FemptoSats Requirements

The FemptoSats submission is to test the viability of using Wifi/LoRa for intercapsuole communication.

4.1 Sensors Requirements

The FemptoSats will have the following sensors:

- BME280 Temperature/pressure/humidity sensor
- BNO086 9 - Axis IMU

4.1.1 BME280 Temperature/pressure/humidity sensor

The BME280 will be run with the following configuration settings:

4.1.2 BNO086 9 - Axis IMU

The BNO086 will be run with the following configuration settings:

4.2 Wireless Communcation Requirements

the FemptoSat will use the following Wireless Communcation modules:

- Integrated Wifi
- LoRa

The Wifi will fail over to the LoRa when the Wifi gets out of range

5 Rocketstation Transmitter (RST) Requirements

6 Rocketstation Requirements

7 Groundstation Requirements