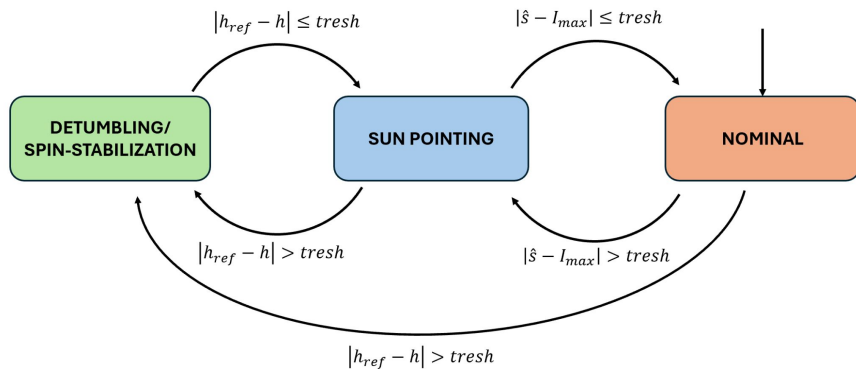


GNC Quad Chart

November 13 2024



Blockers:

None

Progress:

Simulation:

- C++ sim integrated into FSW (some minor changes pending)
- OD: vision model running*, working on integrating Vinsat image generation
- Sensor models added to C++ sim

Mode management:

- Argus-1 GNC MM draft

Attitude EKF:

- Preliminary results, need to do much more analysis.

Plan for the Upcoming Week:

1. Supporting parameter dispersion for MC analysis into C++ sim
2. Implement magnetorquer controllers and begin rudimentary hardware testing

Interfaces:

- Vision:
 - Difficulty running region classifier model
 - Motion blur angular velocity threshold

Kanban

Backlog 8 (Estimate: 120) ...
This item hasn't been started

- GNC-Simulation #14
Pointing Error Budget
- Draft
Enumerate mission scenarios and modes
- GNC-Simulation #11
Magnetorquer sizing
100
- Draft
Test OpenMV startracker camera in schenley park
- Draft
Evaluate NASA COTS Startracker software
- Draft
Solar Array Study
20
- Draft
Investigate off-gassing properties of hard drive platters
- Draft
Look into Optical-Flow-Based Landmark Outlier Rejection for Successive Images

+ Add item

Ready 5 (Estimate: 0) ...
This is ready to be picked up

- GNC-Simulation #32
Multiplicative EKF for Attitude Implementation
P1 M
- GNC-Simulation #28
Sim SRP: Shadow function for SRP acceleration
P2 S
- GNC-Simulation #29
Sim Gravity: Harmonic gravity (if required)
P2 S
- Draft
Bootstrap STM32-based BLDC Controller Board
- reactionwheel_firmware #2
Integrate A55048B SPI Encoder

+ Add item

In progress 7/6 (Estimate: 200) ...
This is actively being worked on

- GNC-Simulation #17
Star Tracker Camera Spec-ing Analysis
P0 100
- GNC-Simulation #10
PNP-Based Orbit Determination Implementation
P1 100 M
- GNC-Simulation #9
RW Sizing
P1 M
- Draft
Study Pixel Truncation Error's Impact on Orbit Determination
- GNC-Simulation #16
Orbit Determination Debugging
- Draft
RW Sizing: implement more complex model in sim
- Draft
Passing Controllers to C++ Sim

+ Add item

In review 4/5 (Estimate: 0) ...
This item is in review

- GNC-Simulation #38
Modify Sim interface to work with SIL
P0 M
- GNC-Simulation #18
Solar Power Generation Model
P1 S
- Draft
Implement Spin-stabilized scenario
- Draft
Spin Stabilized Lyapunov Attitude Controller

+ Add item

Done 12 (Estimate: 20) ...
This has been completed

- GNC-Simulation #31
C++ Core simulation integration
P0 XL
- reactionwheel_firmware #1
Integrate Magnetic Encoder
P1 M
- GNC-Simulation #23
Sim ground track plot convert position from ECI to GEOD
P1 XS
- GNC-Simulation #12
Core Sim Performance
P1 S
- GNC-Simulation #27
Sim C++ bindings: look into pass-by-reference to avoid eigen copies
P1 S
- GNC-Simulation #26
Disperse initial orbit/position/velocity
P1 S
- GNC-Simulation #22
Compute geodetic coordinates from ECI
P1 XS
- GNC-Simulation #35
Visualize ground track in ECEF
- GNC-Simulation #36
Support dispersing sim parameters for MC analysis
- GNC-Simulation #15
Orbit Determination

+ Add item