

GNC Quad Chart

October 02 2024

External Tools Needed:

Blockers:

1. Nadir Pointing - Initial position/orbit knowledge based on SpaceX Transporter 15

Progress:

1. Tested and pushed an orbit determination algorithm to infer the satellite's ECI position and velocity based on detected landmark ECI positions, pixel coordinates, and time
2. Concluded existing astrodynamics packages don't have the exact set of features we need. Decided to pursue a core C++ sim from scratch and use py-bindings to interface with python code

Plan for the Upcoming Week:

1. Complete and verify the core C++ sim
2. Complete actuator sizing

Interfaces:

1. **Mech** -
 - a. Expected Mass and inertia matrix of the satellite
 - b. Expected misalignment with camera placement
2. **Vision** -
 - a. List of camera models in consideration along with their expected errors due to pixel resolution
3. **Avionics** -
 - a. Should have RW average & peak power consumption along with magnetorquer sizing by next week

Kanban

