

# AA279C Homework 6

Due Wednesday, June 13, 2018

## 1 Do Something Cool

For your last homework assignment, do something that interests you that was not on any of the previous homework assignments. This could mean implementing something that was covered in lecture, something you've read about, or something completely new that's related to your own research. Some possibilities are:

1. Implement an MEKF that includes full gyrostad dynamics and treats the gyroscope data as measurements.
2. Implement an algorithm for on-orbit estimation of spacecraft inertia.
3. Implement an algorithm for on-orbit sensor and actuator calibration (alignment and/or scale factors).
4. Use numerical optimization to compute time-optimal slew maneuvers.
5. Implement a control law that performs full 3-axis slew maneuvers using only magnetic torque coils.
6. Model and analyze the effects of flexible structural dynamics on your spacecraft (e.g. solar panels or booms).
7. Design and simulate a gravity-gradient boom and nutation damper for your spacecraft.
8. Simulate a CMG array and implement and test a CMG steering law.