Reading

- Read Section 1 the note "Quadrotor Dynamics and Control" (Document "Week_1 Beard Quadrotor Notes")
- Read "Week_2 Appendix C".

Coding

Throughout the class, at the end of this quarter, we should be able to develop a complete flight simulator for quadcopters. Please read the instructions carefully before sending me your homework.

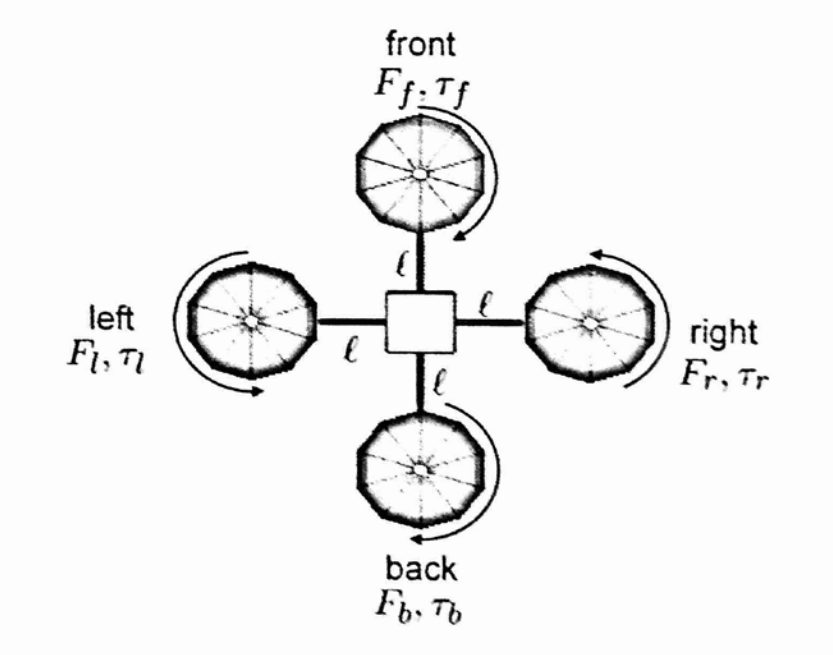
By 11:59 pm on the date that the homework is due, please send me an email containing the following two key components:

- A short report (in pdf) on what you have found out after finishing the coding. This report should be brief. Think about the weekly (or monthly) report you send to your advisor. The items can be organized as bullet points. Focus your key findings, results, and insights. If you had any difficulty, you can also tell me about that in your repot.
- The link of a movie (or multiple movies if there are more than one) of the screen showing the working simulator.
- The email should have "MAE 275" in the title so that I won't miss it (Please continue to include MAE 275 in all our future communications. I receive a lot of emails every day. Having "MAE 275" in the title can help me to find your email.). Also, please don't send me the movie files directly through email. You should upload them in some online storage site, such as Google Drive, Dropbox, or Box, and include the link(s) in the email. You don't need to send me the code.
- Please try not to submit your homework late.

Coding Assignment (Based on Section 1 "Reference Frames")

The objective of this assignment is to create a 3-D graphic of a quadcopter that is correctly rotated and translated to the desired configuration. Creating animations in Simulink described in document "Week_2 Appendix C" (inside the Readings folder) and the example function "HW2_Assignment" is contained in file "HW2_Code" (inside the Homework folder).

1. Read the document "Week_2 Appendix C" carefully.
2. Revise the file "HW2_Assignment" as well as other relevant files to create an animation drawing of the aircraft in the following figure (you can set your own parameters). *When you are creating the vertices and faces, you should make sure that the dimensions of their corresponding matrices are correct, i.e., the same number of vertices should be used to define each face.*



3. Use your Simulink model to verify that the aircraft is correctly rotated and translated in the animation.
4. In the animation file, switch the order of rotation and translation so that the aircraft is first translated and then rotated, and observe the effect.