Hover Copter
Project

There have been several homework assignments working on the Hover Copter, but those don't work with the actual hardware. This document's purpose is to get you going on the hardware, where the "rubber meets the road."

Goals:
The goals of this project are learning. We want to actually use the things we did in homework to control the Hover Copter.

Milestones:
Here are some milestones you need to meet. More information will be provided in class near the time you need it to achieve these milestones.

Milestone	Deliverable	Due Date
Software for data communication/debugging	Code, documentation & screenshots	4/16/2021
Bring-up plan (hardware & software)	Written test plan	4/21/2021
Build Mechanism and PCB	Photos of mechanism and PCB	4/26/2021
Test hardware	Results of your tests	4/28/2021
Motor and thrust modeling	Documentation on tests and results	4/30/2021
Dynamics tests (hanging down)	"	5/4/2021
Apply state feedback, "hand placing" poles	Code, documentation & videos	5/7/2021
Place poles using LQR	Documentation & videos	5/12/2021
Full Order Observer	Code, documentation & videos	5/17/2021
Reduced Order Observer	"	5/21/2021
Kalman Full Order Observer	"	5/26/2021
Final Documentation	"	6/2/2021

Hints:
Here you will find a lot of help from similar experiments at MIT. The course is on edX.org if you want to check it out. There is a very nice tutorial to go with that course at this site. The server software used in the edX course is a bit out of date. It is suggested you use this software instead. I recommend you read over all this material in preparation for this project, and re-read the portions of it that will help you with each milestone when you are working on it. The Kicad design files for this project are on my web site.