

Abstract geometric lines in the top left corner, consisting of several overlapping, irregular polygons and lines that create a complex, layered effect.

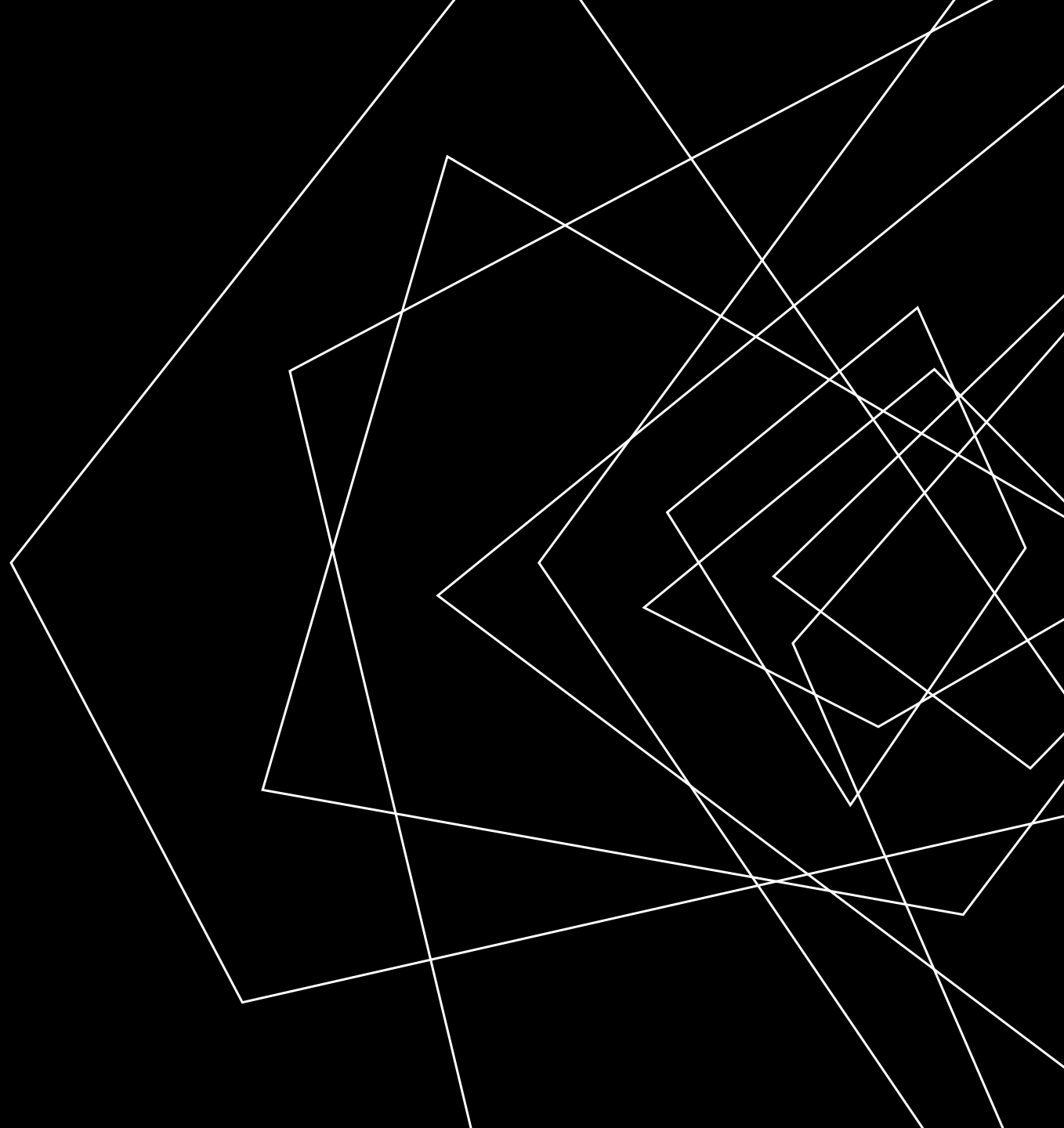
ME457 FINAL SUBMISSION

Team Oiler

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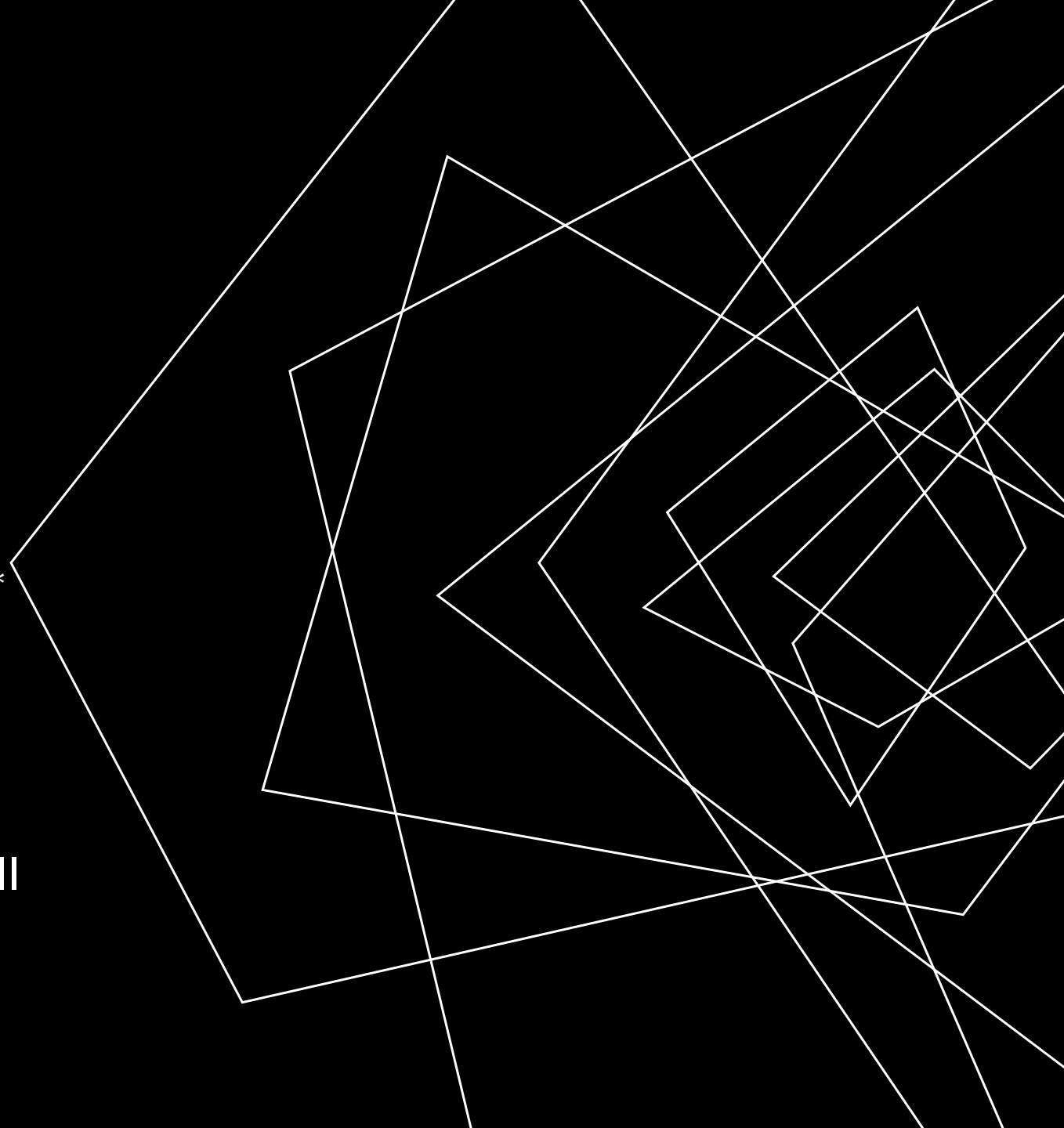
CHAPTERS 5-6

- Implemented trim
- Implemented autopilot design using loop closure



IMPLEMENTING TRIM

- Implemented trim control
 - Travels at a constant speed V_a^*
 - Climbing at a constant flight path angle γ^*
 - In constant orbit of radius R^*
- Employed both PID control and full state control



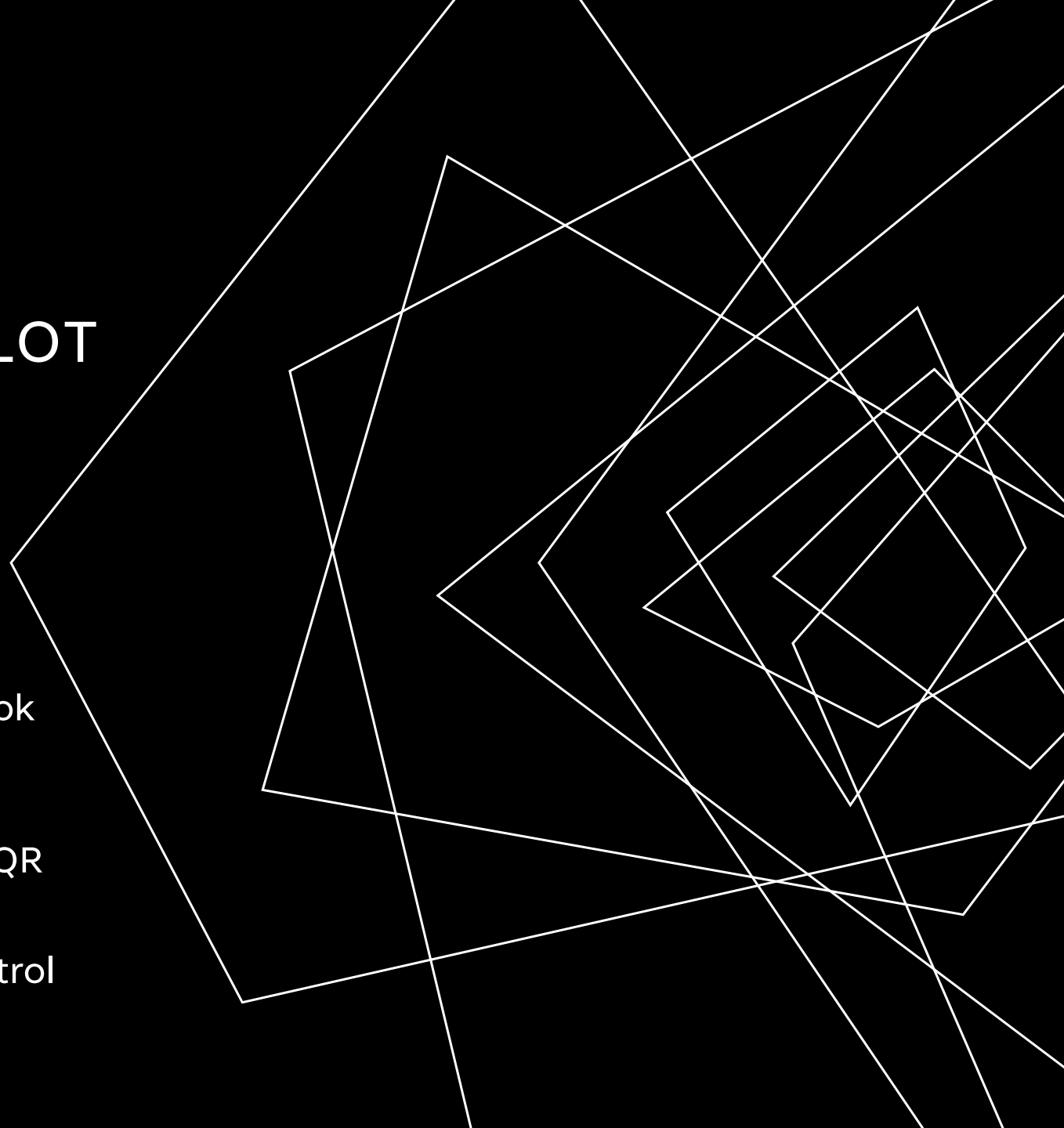
IMPLEMENTING AUTOPILOT

PID Control

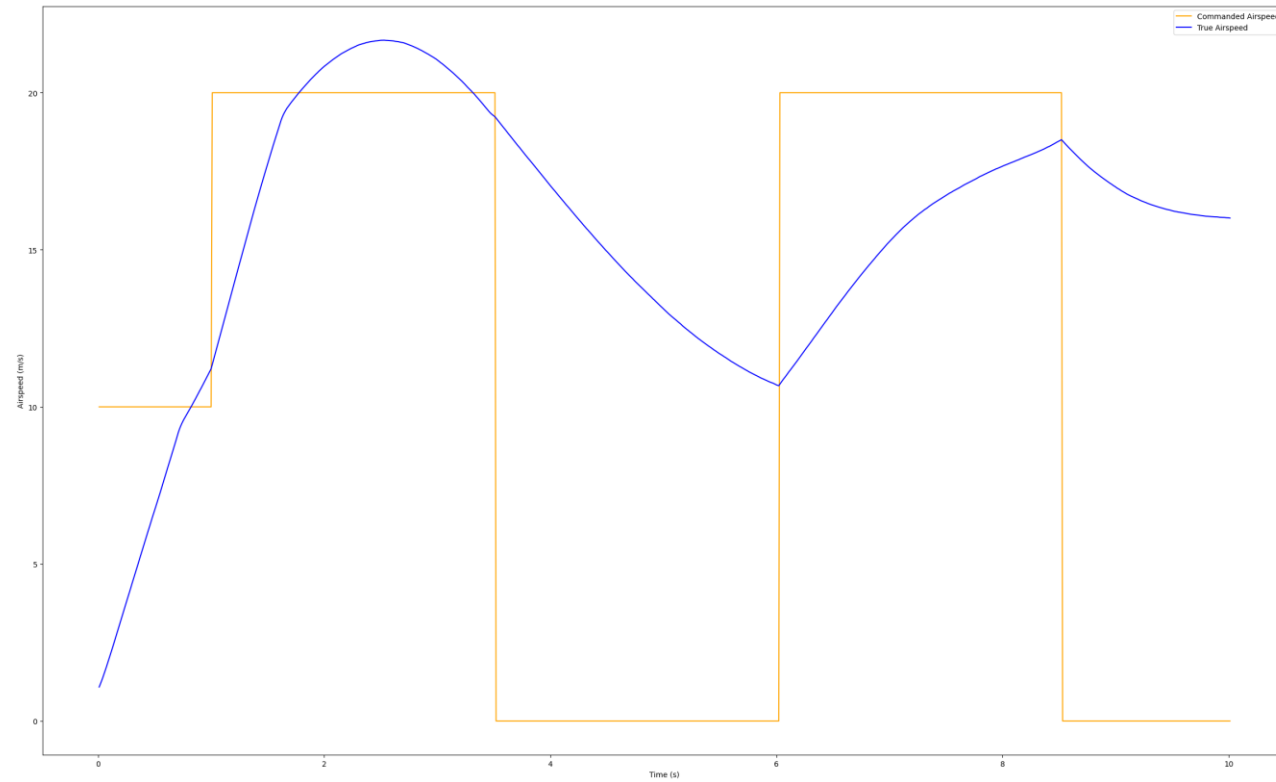
- Employed PID control for course angle, airspeed, and altitude
 - Used gains recommended by textbook

State Control

- Employed state control using provided LQR values to find gains
 - Ultimately decided on using PID control instead, for the ease of coding it

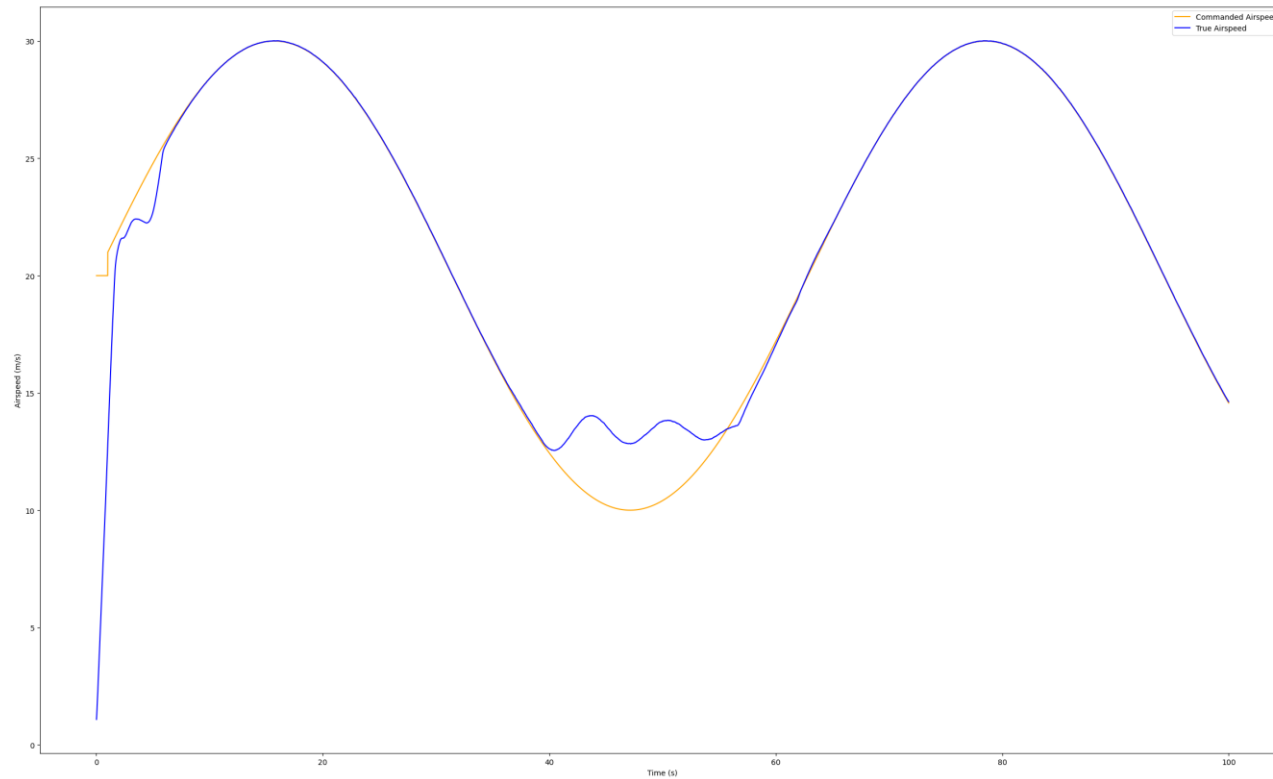


COMMANDED AIRSPEED



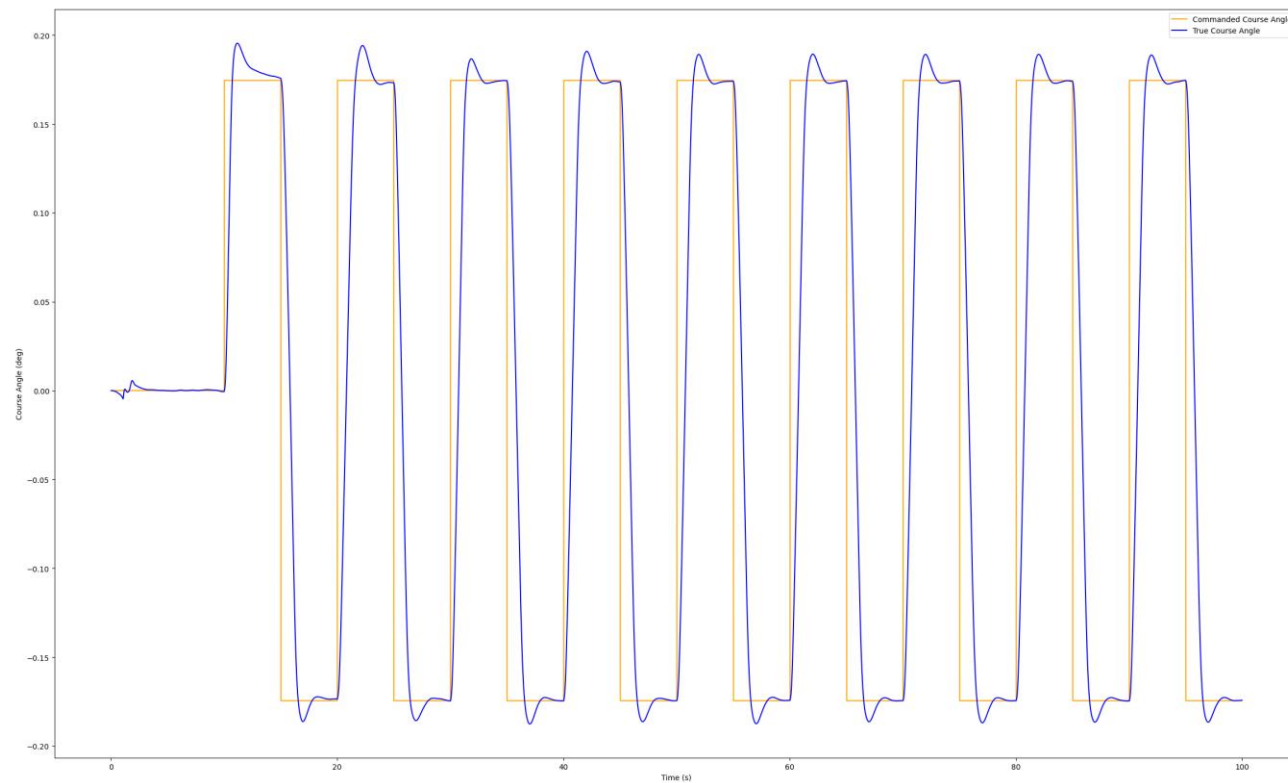
Square reference with a delayed start, an amplitude of 20, and a DC offset of 10

COMMANDED AIRSPEED



Sinusoidal reference with a delayed start, an amplitude of 12, and a DC offset of 10

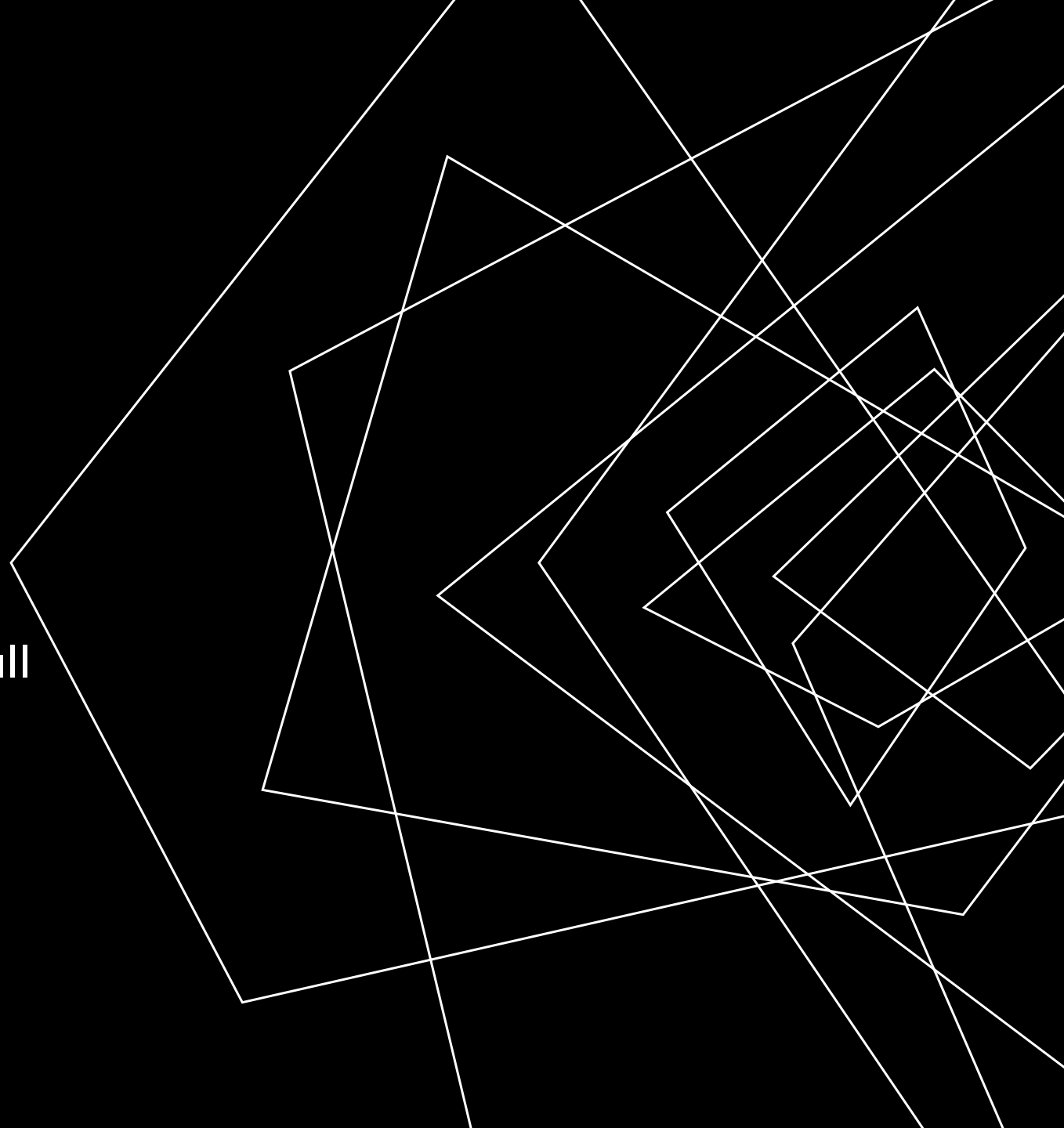
COMMANDED COURSE ANGLE



Square reference with a delayed start and an amplitude of 10 degrees

CHAPTERS 7-8

- Made significant progress with Kalman filter state tracking
- Needs some debugging, but overall implementation is 75% of the way there



INDI RESEARCH

- Did some quick research about INDI controllers and various implementations
- See `drone_indi.pdf` for a quick writeup

