Background

The Vortex Lattice Method is an invscid method for the low-fidelity analysis of lifting bodies (wings). You can learn more about the theory from the ME 515 Book and/or a google search.

For this assignment, you will be utilizing a code produced by students in the FLOWLab. It is a Julia package called VortexLattice.jl. You will probably want to go through the Getting Started and Examples: Steady State Analysis of a Wing and Tail portions of the documentation to get familiar with how to use the code.

[todo: add more details to the background]

Assignment

Once you are familiar with using VortexLattice.jl, complete the following trade studies:

1. Explore the wing aspect ratio vs wing efficiency.
2. Explore the affects of tail volume ratio on the stability derivatives of an airframe. Be sure to discuss desirable signs for stability derivatives.
3. Explore the effects on angle of attack on the lift coefficient. Discuss the limitations of the VLM and explain which of your results are wrong due to those limitations.

Then write a report (paper) on your methods, results, and takeaways as described in the course syllabus.

And submit your code via a branch/pull request as described in the course syllabus.

Useful Resources

[todo: add links here to text resources, code documentation, etc.]