

Exam 2

Due Jun 10 by 11:59pm **Points** 100 **Submitting** a text entry box or a file upload **File Types** cpp, h, and zip
Available after Jun 5 at 12am

This exam is a group assignment. Please do not copy code written by others, this exam is open-book, open-notes, open past assignments, and open but limited internet. You may use the internet, but websites that allow you or other classmates to post questions and get solutions are not allowed. For example, Chegg, Course Hero, Quizlet, Slader, and other homework-help websites are not allowed.

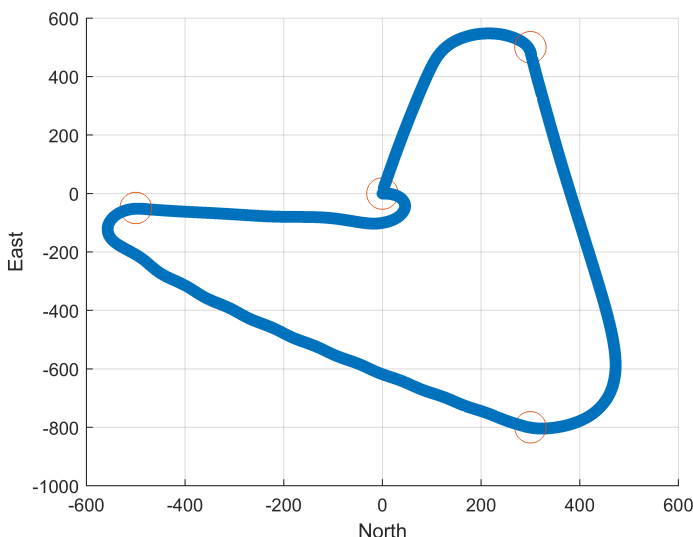
Your assignment is to make an autopilot for NED The MATLAB Flight Simulator using C++ code and Matlab mex functions. The C++ files need to do the following:

1. Estimate the airplane's orientation.
2. Estimate the airplane's inertial position.
3. Apply waypoint following strategies and autonomous flight control to help the airplane fly to each provided GPS waypoint.

You will need only the following files:

1. [runme_NED_Exam_2_do_not_modify.m](https://byui.instructure.com/courses/232306/files/107620938?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620938?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620938/download?download_frd=1)
(https://byui.instructure.com/courses/232306/files/107620938/download?download_frd=1)
2. [mex_Exam2_function.cpp](https://byui.instructure.com/courses/232306/files/107620940?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620940?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620940/download?download_frd=1)
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3. [HolopticSensorFusion.h](https://byui.instructure.com/courses/232306/files/107620942?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620942?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620942/download?download_frd=1)
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4. [HolopticSensorFusion.cpp](https://byui.instructure.com/courses/232306/files/107620944?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620944?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620944/download?download_frd=1)
(https://byui.instructure.com/courses/232306/files/107620944/download?download_frd=1)
5. [AutoControl.h](https://byui.instructure.com/courses/232306/files/107620946?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620946?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620946/download?download_frd=1)
(https://byui.instructure.com/courses/232306/files/107620946/download?download_frd=1)
6. [AutoControl.cpp](https://byui.instructure.com/courses/232306/files/107620948?wrap=1) (<https://byui.instructure.com/courses/232306/files/107620948?wrap=1>) [↓](https://byui.instructure.com/courses/232306/files/107620948/download?download_frd=1)
(https://byui.instructure.com/courses/232306/files/107620948/download?download_frd=1)

Save all files in the same folder on your computer. The runme file should not be modified. You will need to add code to the files *HolopticSensorFusion.cpp* and *AutoControl.cpp*. You may modify the other files as well, but they probably do not need to be modified. If your code is working, you should see a simulation of an airplane flying to the GPS waypoints provided. After the simulation has completed, the following graph should appear to show that your plane has successfully navigated to each waypoint:



What to submit

Upload all files (.cpp and .h) that you modified. The instructor will compile and run them to grade your exam.

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