

Venkataramana Nagarajan

Project Report- Aircraft Collision Avoidance

Project Description

Assumptions

1. The source of both the planes cannot be the same to avoid initial collision.
2. The destination of both the planes cannot be the same to avoid final collision.

Controller working

The controller should guide the aircraft from the source to destination while keeping the following in mind

1. At every step the controller should bring the aircraft closer to its destination.
2. Controller should check for incoming messages from other aircrafts.
3. Controller should predict the path of the other aircraft and avoid navigating the aircraft to those positions thus avoiding collision between the 2 aircrafts.
4. At all given times, there must be 1 possible move for each aircraft.

Progress

I have designed the algorithm for the controller and used Matlab to code it. You can find my code at

<https://github.com/venkatvandy/AirCraftController>

Inside "controller.m" I have used the following two functions to ensure that the controller code looks clean and modularised.

1. path_finder
2. find_possible_path

After executing it, following are the results of the testbench.

No of test cases **Passed : 21371**

No of test cases **Failed : 803**

Problems

In the test-cases which are failing, I have seen that in my algorithm at certain positions, if the shortest paths of both the aircrafts lead to the same position the controller still goes ahead and grabs that position for both aircrafts which causes collision. I am working to rectify this anomaly.