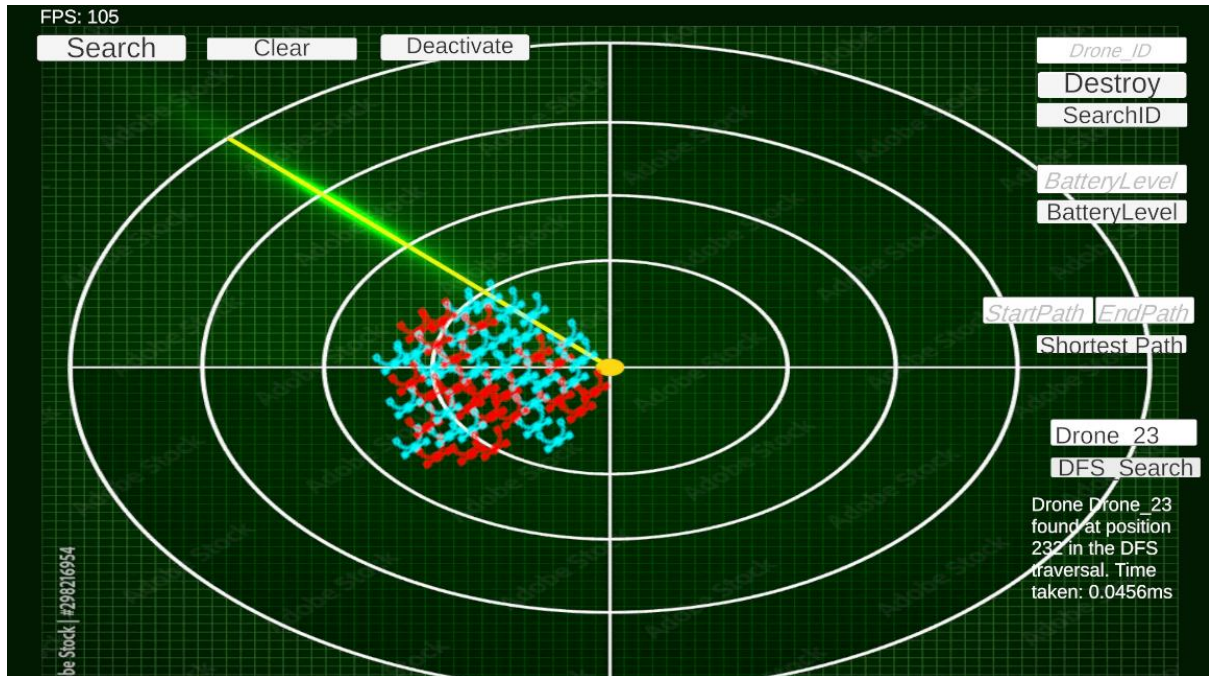


## Drone Homework 4 (Final Homework) Report

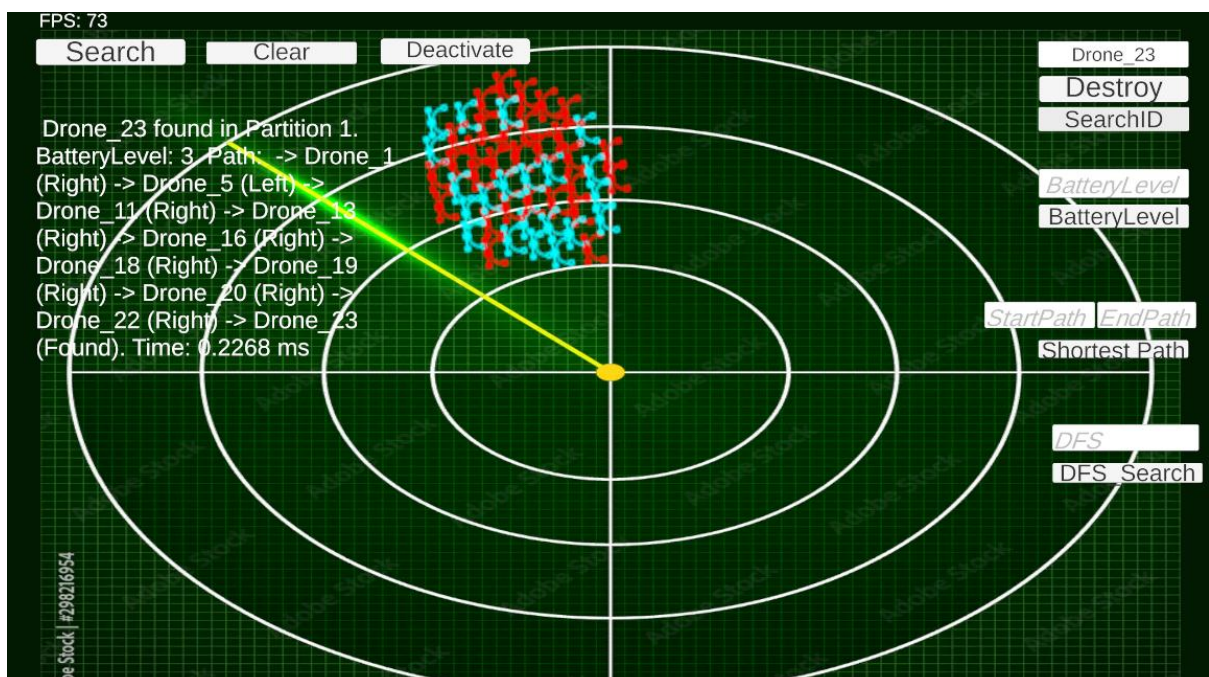
50 Drones :

### 1. DFS Search



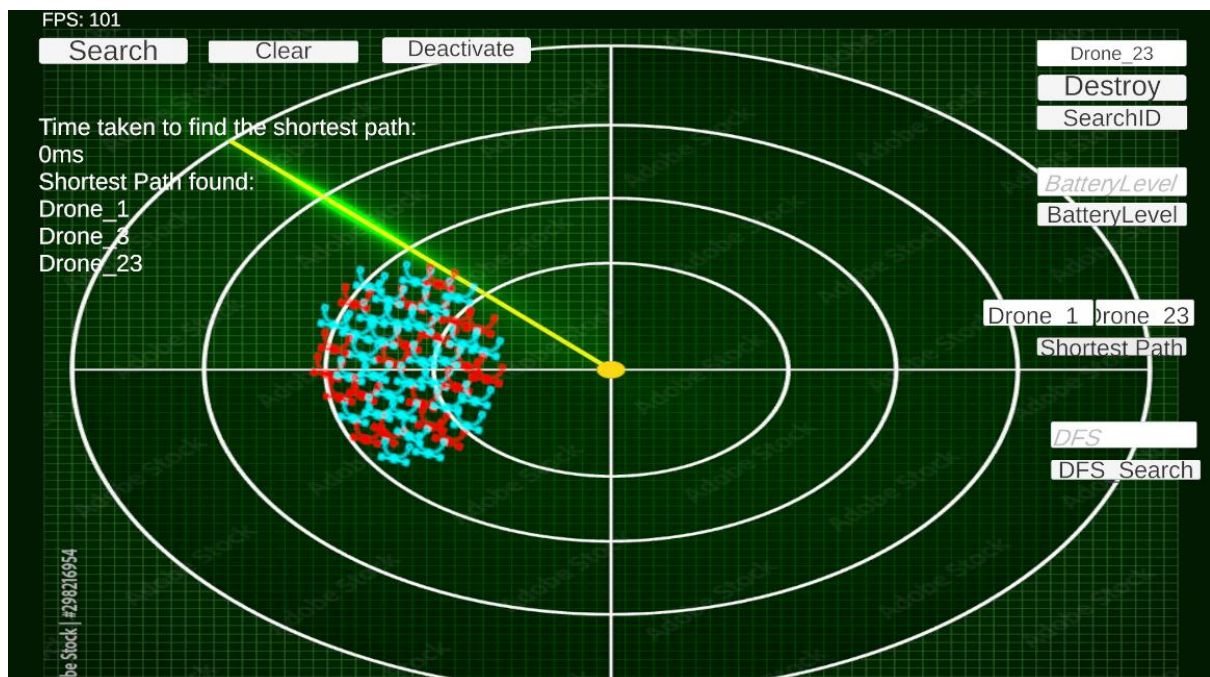
Based on the output, Drone\_23 was found at position 232 during the DFS traversal, meaning 232 nodes were traversed to locate its exact position. The operation to search for Drone\_23 took 0.0456 ms, with the system operating at peak performance at 105 FPS.

### 2. Shortest Path





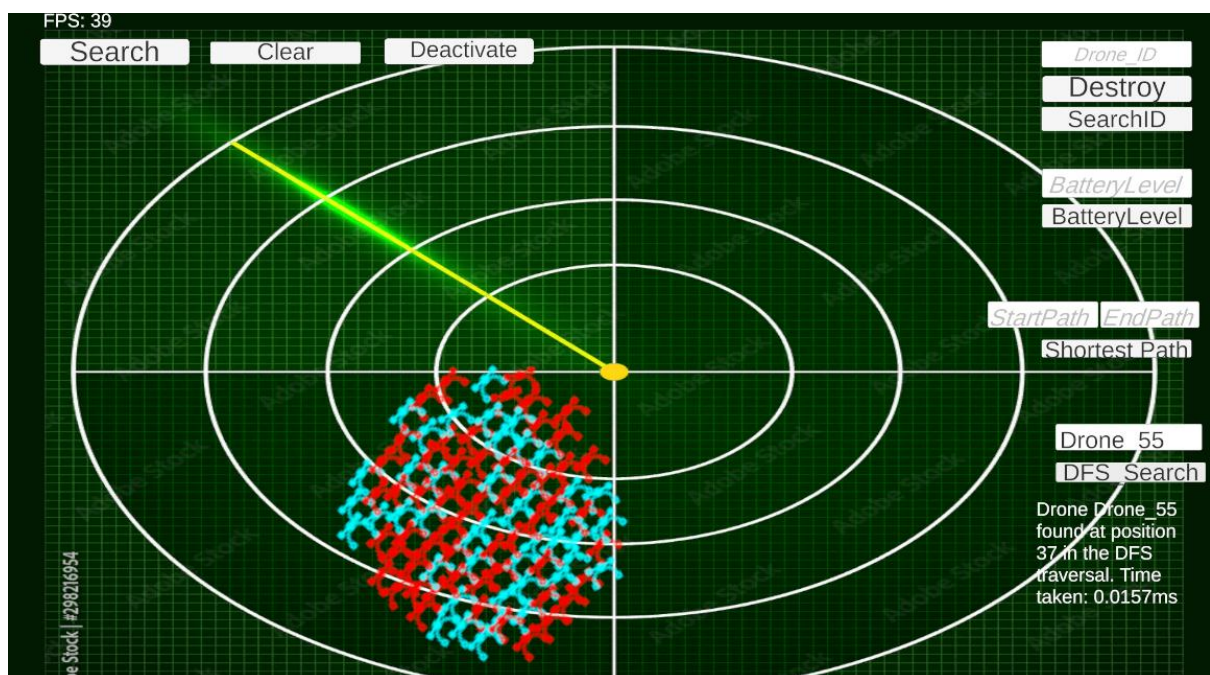
Before searching for the shortest path for any assigned drone, we need to determine its exact path. Therefore, the SearchID button should be clicked first to identify its path.



Afterward, we can search for the shortest path for the drone. The output shows that the shortest path from Drone\_1 to Drone\_23 is: Drone\_1 → Drone\_3 → Drone\_23. The time taken to search for the shortest path is 0 ms, with the system operating at approximately 101 FPS.

100 Drones :

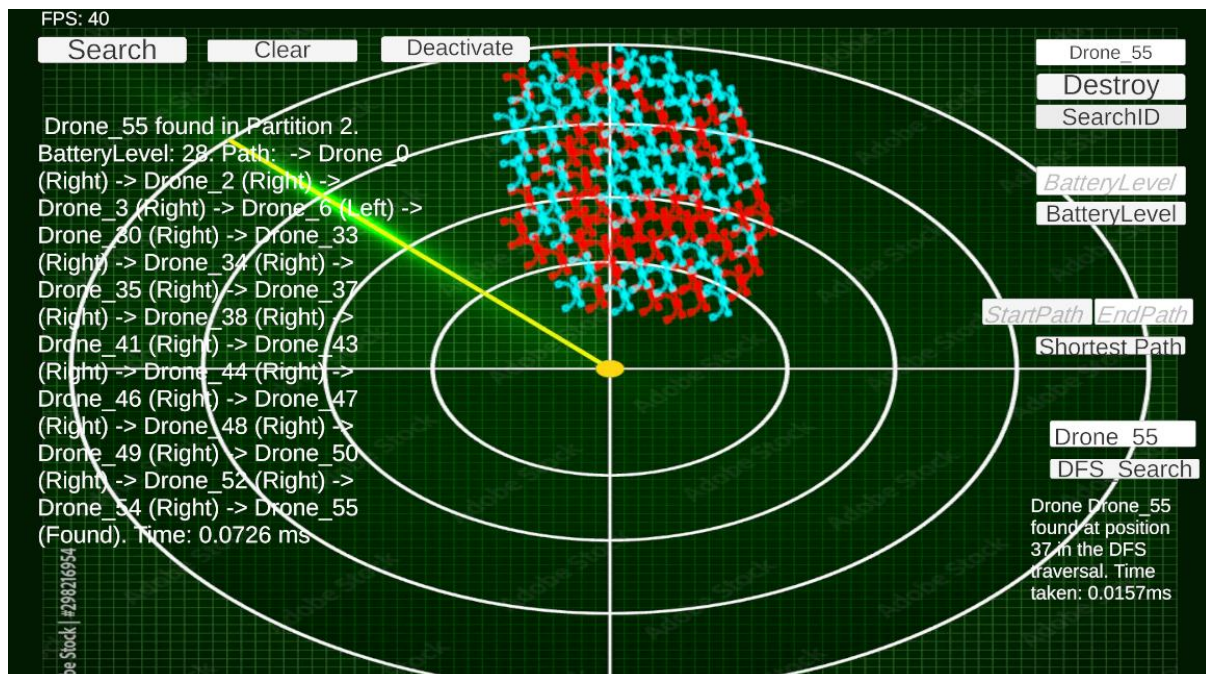
### 1. DFS Search



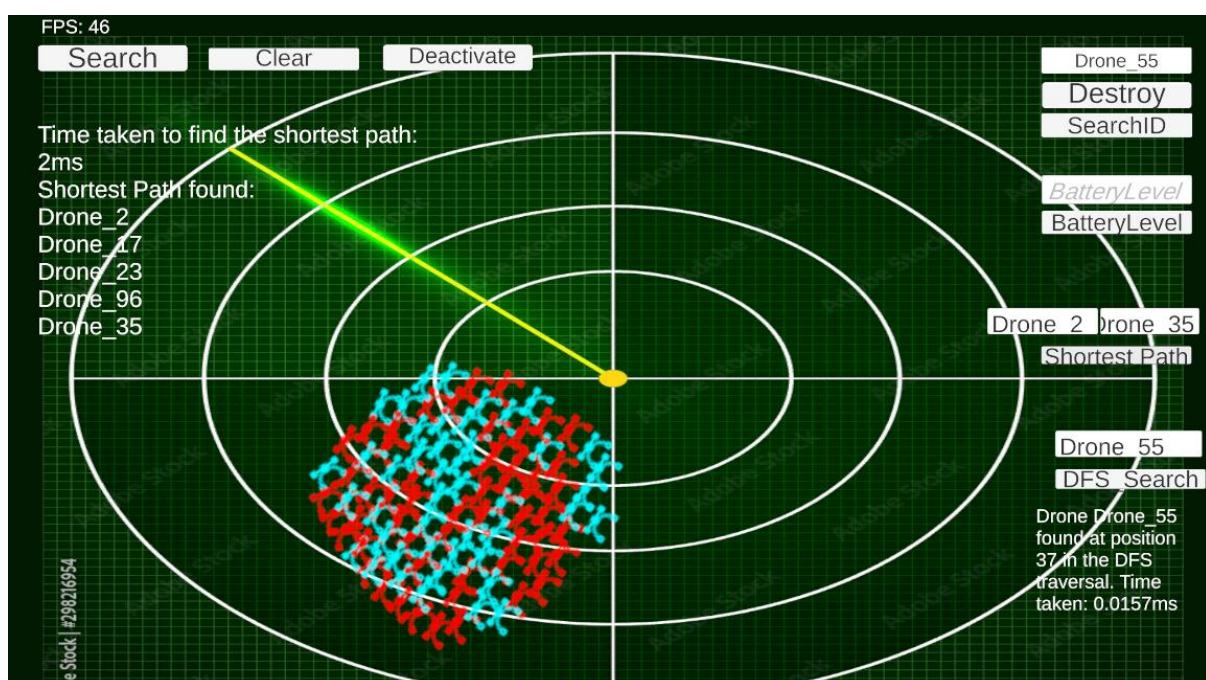


Based on the output, Drone\_55 was found at position 7 during the DFS traversal, meaning 7 nodes were traversed to locate its exact position. The operation to search for Drone\_55 took 0.0157 ms, with the system operating at peak performance at 39 FPS.

## 2. Shortest Path



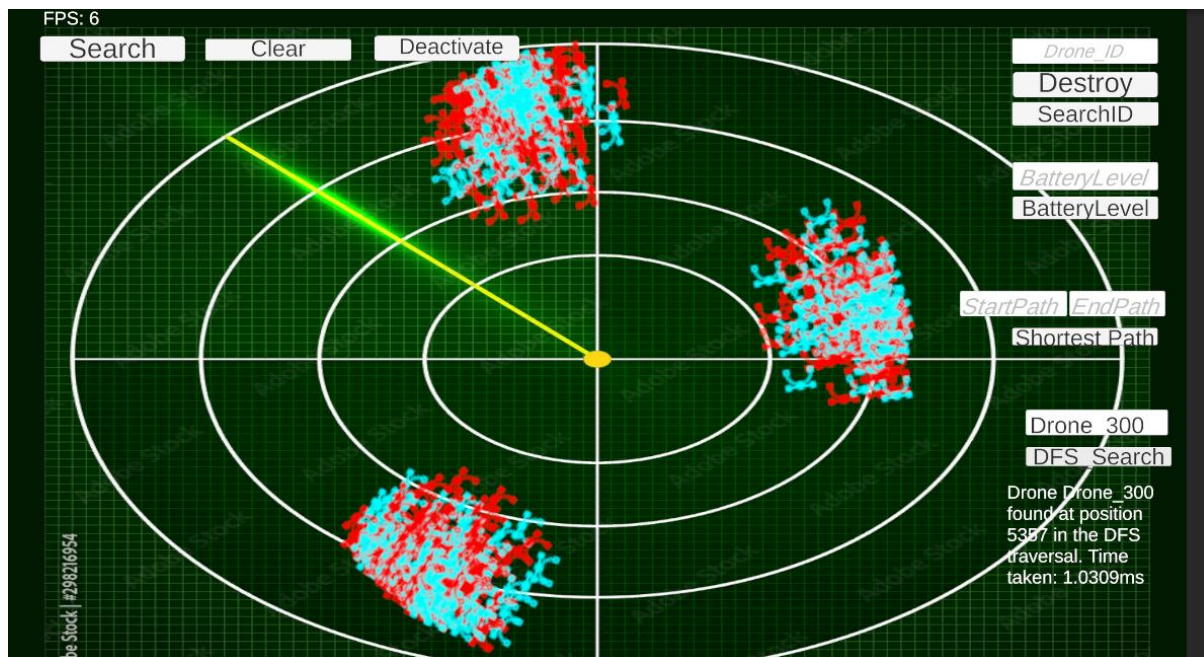
Before searching for the shortest path for any assigned drone, we need to determine its exact path. Therefore, the SearchID button should be clicked first to identify its path.



Afterward, we can search for the shortest path for the drone. The output shows that the shortest path from Drone\_2 to Drone\_35 is: Drone\_2 → Drone\_17 → Drone\_23 → Drone\_96 → Drone\_35. The time taken to search for the shortest path is 2 ms, with the system operating at approximately 46 FPS.

500 Drone:

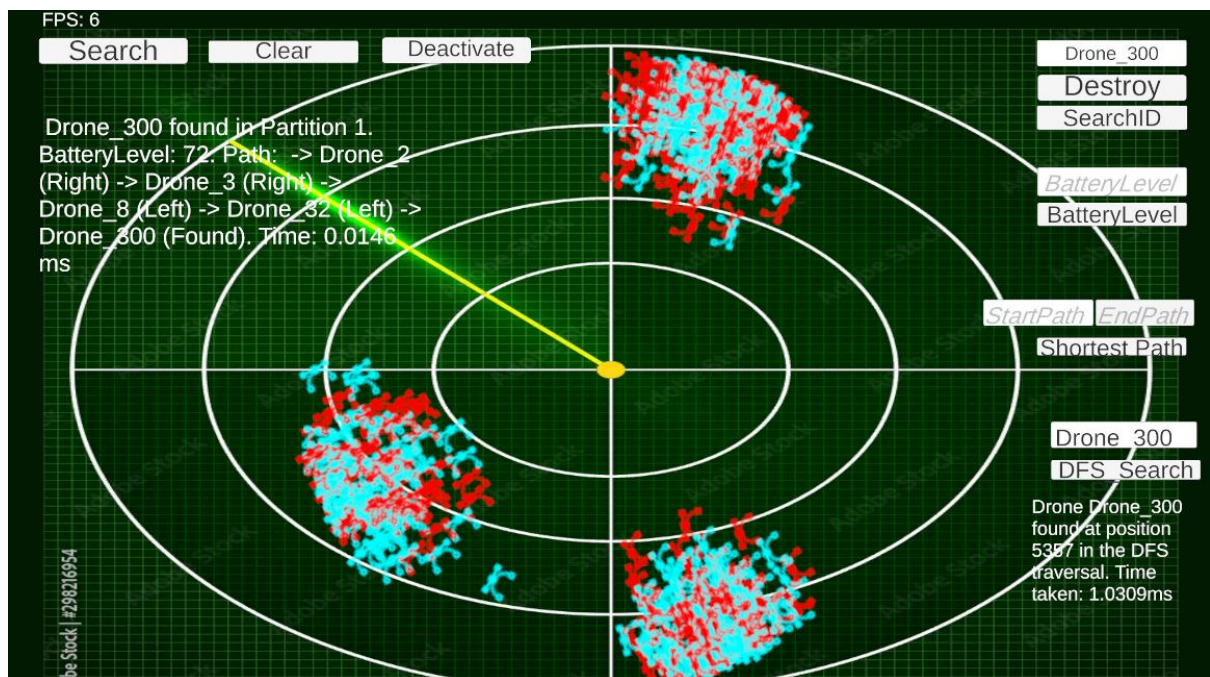
### 1. DFS Search



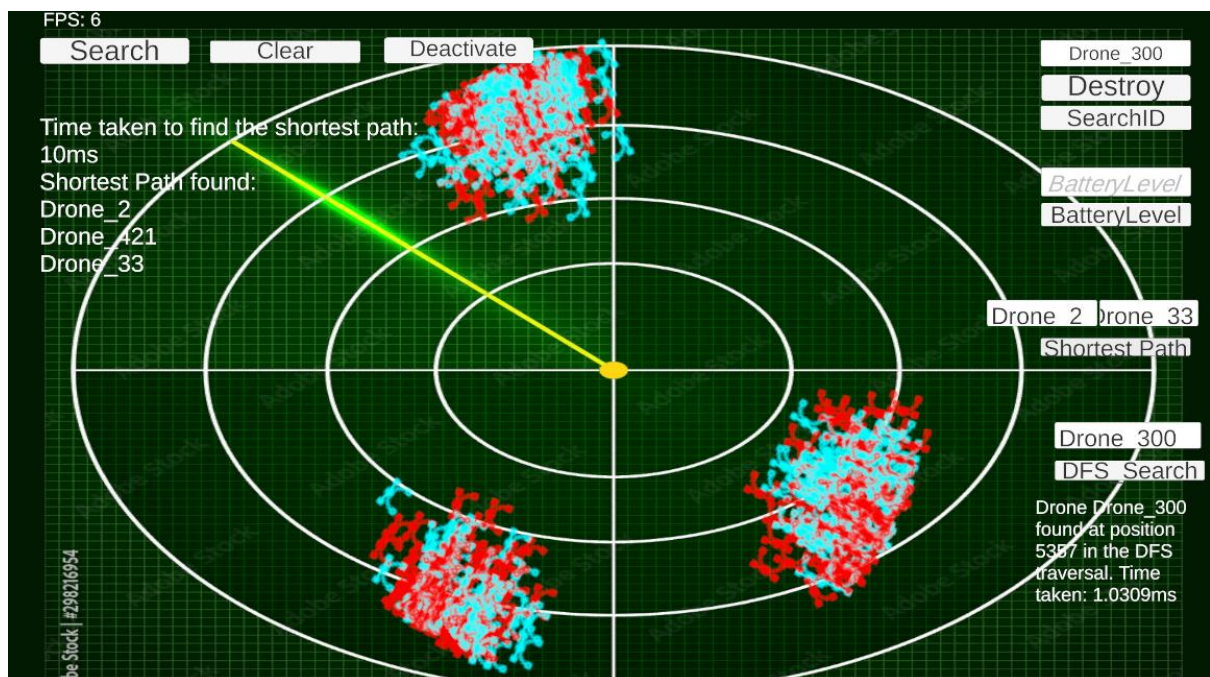
Based on the output, Drone\_300 was found at position 5357 during the DFS traversal, meaning 5357 nodes were traversed to locate its exact position. The operation to search for Drone\_300 took 1.0309 ms, with the system operating at peak performance at 6 FPS.



## 2. Shortest Path



Before searching for the shortest path for any assigned drone, we need to determine its exact path. Therefore, the SearchID button should be clicked first to identify its path.

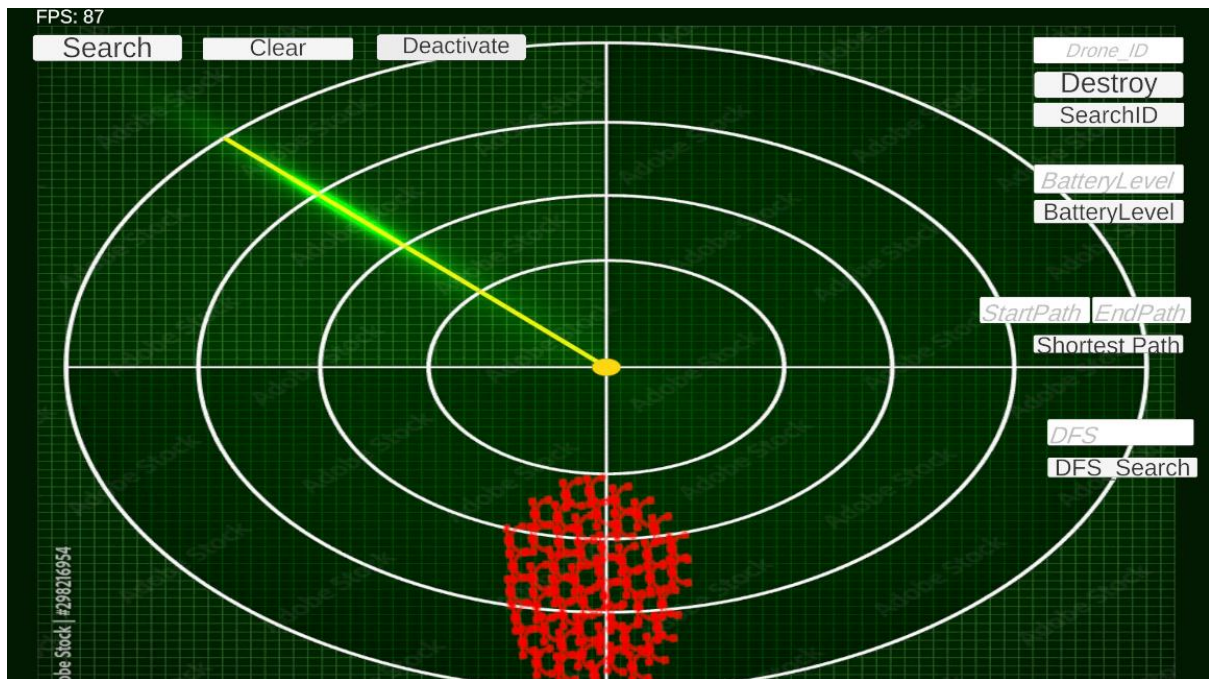


Afterward, we can search for the shortest path for the drone. The output shows that the shortest path from Drone\_2 to Drone\_33 is: Drone\_2 → Drone\_421 → Drone\_8. The time taken to search for the shortest path is 10 ms, with the system operating at approximately 6 FPS.

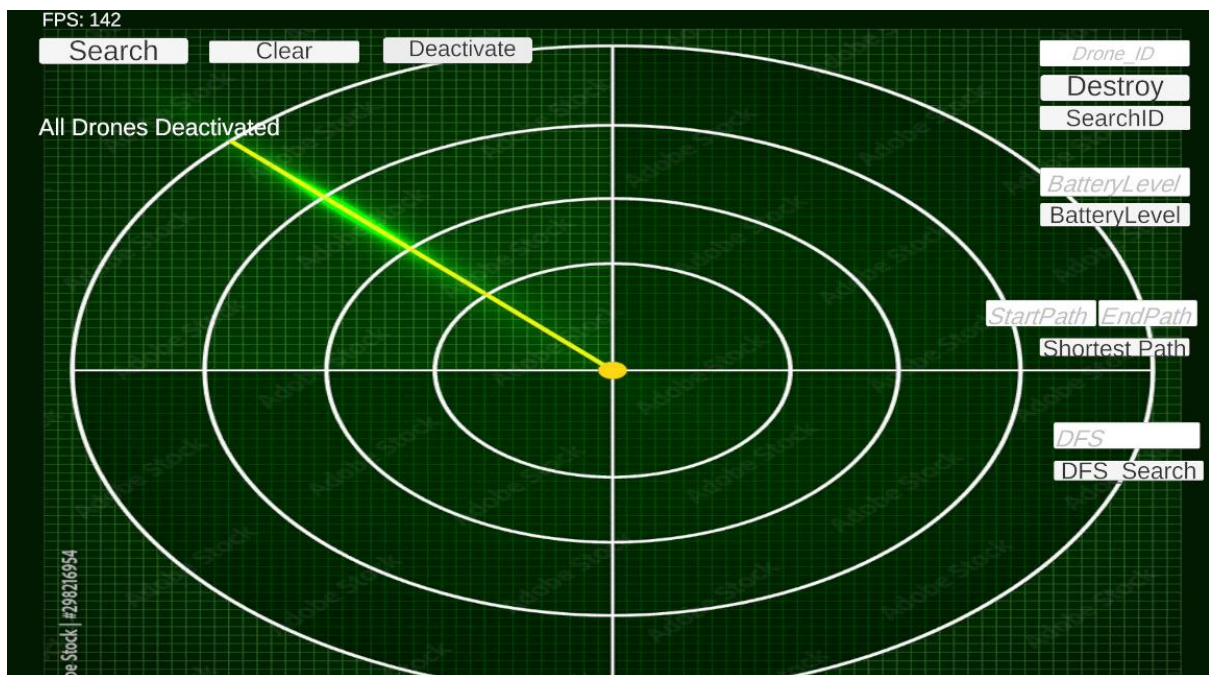


Unfortunately, for 1000 Drones, our machine can't go further because of the machine keep crashing after we run the code.

To enhance the functionality and make our program resemble a drone simulation, we added a Deactivate button. This button is designed to deactivated all the drones when clicked.



When the button is clicked, all drones turn red, and after 1 ms, all the drones are deactivated.



The output will display the message “All Drones Deactivated” after all drones have been deactivated.

PC Specifications for the test :

CPU : Intel i7-11370H

GPU: Nvidia RTX 3050 Ti

RAM: 40GB

Storage: 1.5TB SSD