

Team Number: Group 32

Project Title: Multiple Drones Coordination System

Report Date: 04/07/2025

Part one:

All team members have detailed tasks listed on Team's Planner: YES or NO; if NO, explain.

Please answer the following questions:

1. Have you met as a team this past week? If yes, give date/time, and the members attended the meeting. If no, explain.

No, we could not arrange a time that suits all of the members of the group.

2. Have you met with the sponsor as a team? If yes, give date/time, and the member attended the meeting. If no, explain.

No, there was not an invitation and we focused on getting the drone working.

3. Describe verbally the tasks completed the past week and the challenges faced.

Tutku Gizem Guder (Target Detection Subsystem)

- I changed all my algorithm from C++ to Python to be fitting to the codes that my team used for Unreal Engine.

- Integrated the algorithm to the rest of the project, only needing to integrate it to each drone in the environment which will be handled by my teammates.

Matthew Wyatt (Data Management and Communications Subsystems)

- Continue to sync data with AirSim, the user interface, and our MySQL database as well as work to bring communications between other AirSim-specific subsystems.
- Test and debug integrations between the other subsystems and AirSim.

4. Describe the tasks to be completed the coming week.

Tutku Gizem G. (Target Detection Subsystem)

- As of now, I am awaiting from my teammates to integrate the algorithm to drones in the environment and to test it (as Unreal Engine does not work on my Macbook).

Student Name	# Tasks completed past week	# Tasks not completed	# Tasks for next week
Brenden Martins	N/A	1	1
Matthew Paternoster	N/A	1	1
Matthew Wyatt	1	0	1
Tarek Kayali	1	0	N/A
Tutku Gizem	1	1	N/A

Name of the Member: Tutku Gizem Guder

Report Date: 4/7/2025

Unreal Engine is still not working, however, as my team used Python to develop for the environment, **I changed my C++ codes to Python and integrated the algorithm to the rest of the project**. However, as Unreal Engine does not function properly on my

Macbook, I could not test it or integrate it on the drones in the environment. This is something that my teammates will look into, and integrate. We are communicating ongoingly to ensure that our device mismatch does not affect (or affects minimally) our project outputs.

Coming Up Tasks

- Integrating the algorithm to drones in the environment, and testing its performance.

Name of the Member: Matthew Wyatt

Report Date: 4/7/2025

List the following:

1. All tasks completed the week before the past week (completion date in parenthesis). This is copied from the last report, and if this report is the first one, skip.

- a. (4/6/2025) Subsystem Data Integration (User Interface Subsystem with Database Subsystem)

Description: Integrate the User Interface Subsystem with the database and other project subsystems (already integrated with simulation environment). Ensure that the UI can display real-time data from the Drone Control and Target Detection subsystems during simulation.

Outcome: Displayed a fully integrated User Interface Subsystem that provides accurate and real-time data visualization for the simulation environment.

- b. (4/6/2025) Project Testing and Debugging

Description: Conduct comprehensive testing and debugging of the integrated system, including all subsystems and the AirSim environment. Identify and resolve any remaining issues to ensure the system meets project requirements.

Outcome: A stable and fully functional system that is ready for further development and deployment.

2. All tasks completed the past week (completion date in parenthesis)

a. (4/12/2025) **Final Presentation Setups**

Description: Prepare the final presentation setup, including debugging the integration of subsystems, organizing the demonstration environment, and ensuring all required materials are ready for the presentation.

Outcome: A polished and professional presentation setup that effectively communicates the project's goals, progress, and outcomes.

3. All tasks you are currently working on or planned for this coming week (completion date in parenthesis)

a. (4/18/2025) **Presentation Testing and Debugging**

Description: Conduct testing and debugging of the final presentation, including rehearsing the demonstration, verifying the functionality of all subsystems (includes simulation environment, control system, target detection, user interface, data management, and communications), and addressing any issues that arise during the presentation rehearsal. Will be completed outside of progress reports.

Desired outcome: A seamless and error-free presentation that demonstrates the project's success and functionality to the sponsor.

Name of the Member: Tarek Kayali

Report Date: 4/7/2025

Tasks Completed This Week:

- **Integrated Drone Control Script with AirSim:** Connected and validated a Python script to control the drone using AirSim's API. The script includes automated takeoff, movement across defined waypoints, and landing logic. It was tested in a simulated loop using four coordinate points to mimic mission behavior.
- **Prepared Files for Subsystem Integration:** Finalized and shared relevant drone control files (e.g., flight logic, AirSim interface script) with team members for full-system integration. These files will be used to demonstrate real-time autonomous control in the upcoming final presentation.

Challenges Faced:

- Faced some compatibility issues between AirSim and the simulation setup, particularly when running control scripts in parallel with other subsystems.
 - Coordination delay due to overlapping development timelines with other subsystems.
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Tasks for the Coming Week:

- **Assist with Final Integration and Testing:** Work with other team members to fully integrate the Drone Control Subsystem into the unified system. Run final tests and troubleshoot real-time performance issues before the demo.
- **Presentation Rehearsal Prep:** Collaborate on the demo flow and prepare talking points to clearly explain the drone control logic and how it interacts with other components like Target Detection and the User Interface.

Name of the Member: **Matthew Paternoster**

Report Date: **04/7/2025**

Implementation (2/26):

- **Testing and Feedback:** Continue to debug and refine the UI and live metrics integrated with airsims. Python server connects successfully with AirSim, however the drone feed does not work still.
- **Testing Integrated System:** Drone feed still not displaying correctly, still trying to debug.

Next Steps:

Still having difficulties trying to debug the live feed not displaying, trying to research if others have had similar issues with using this older version of UE and Python.

Name of the Member: **Brenden Martins**

Report Date: **04/07/2025**

List the following:

1. All tasks completed the past week (in this example template, tasks between 1/20 and 1/26) (completion date in parenthesis) **Highlight these tasks headers in green.**

None (03/31/25)

2. Tasks you attempted but did not get to complete due to time constraints or other factors in the week (in this example template, tasks between 1/20 and 1/26).

Complete Integration of Subsystems (04/07/25)

We are still having issues with incompatibilities, certain subsystems aren't able to test properly due to having different OS and engines to run the environment. This week will have to be spent basically, every single day, trying to brute force the conversions from macbook and Unity Engine.