

Meeting Summary:

1) Project Report

- Discussed the main headings to be included in the project report that must be submitted by the end of the first term. It was decided that the first draft should be ready by **09/12/2024** and presented during the meeting on **14/12/2024**.
- The second version of the project report is planned to be finalized by **23/12/2024**.

2) Project 1

Main Topics: Object classification, threat prioritization, accurate identification of locations.

- Discussed how to handle threat detection and prioritization. It was emphasized that the distance of threats to friendly assets and the spatial positions of all entities in the area must be determined.
- The evaluation of threat attributes was detailed. It was highlighted that threats should be classified by assigning coefficients based on their type. The classified threats will be compiled into a list, which can then be integrated into the second project.
- A basic formula was proposed; it was decided to revisit and refine this formula.
- Addressed the questions: “How will we identify the location?” and “How can we teach YOLO new objects?” Solutions to these questions need to be determined.

3) Project 2

Main Topics: Drone-threat matching and assignment, path planning.

- Discussed whether the threat list from Project 2 would be received with IDs, and if so, how the matching process should be handled. The importance of accurate matching was emphasized.
- The **Threat Assignment** topic was elaborated on. It was discussed that based on the threat list, drones equipped with specific payloads should be matched with appropriate threats. This matching process was compared to “key-value” pairs, and the importance of correct mapping was stressed again.
- It was emphasized that each drone must engage with a threat, and the rules for this process need to be carefully and precisely defined and coded.

- The second major topic was **Path Planning**. It was proposed that path planning could be approached in two ways: classic algorithms like A*, or reinforcement learning-based algorithms.
- Team members were provided with links to previous implementations of reinforcement learning and classic methods, and it was recommended to review OpenAI Gym.
- It was suggested to start with simpler examples for path planning and research similar projects on platforms like GitHub.
- Implementing both classic and reinforcement learning approaches in parallel and comparing their differences, advantages, and disadvantages was noted as a beneficial contribution to the project.

Tasks to Be Completed by the Next Meeting:

- Teach YOLO new objects for the first project.
- Begin preparing prototypes for the second project based on the shared project links.