



**TED UNIVERSITY**

**Faculty of Engineering**

**Department of Computer Engineering**

**CMPE 491- Senior Project I**

**ATLAS (Autonomous Threat Localization and Avoidance System)**

**Project Proposal**

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**Team Members:**

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## **1. Name of the Project**

The project is titled as **ATLAS (Autonomous Threat Localization and Avoidance System)**.

It is designed as an autonomous patrol swarm for border surveillance, coordinated operations, threat detection and localization.

## **2. URL of the Project Web Page**

*The URL of the project web page:* <https://sites.google.com/view/autonomous-patrol-swarm/main-page>

The project web page would serve as the main platform where all reports and documentations about the project's improvements would be shared.

## **3. Names of Supervisor and Jury Members**

*Supervisor:* Dr. Deniz Cantürk

*Jury Members:* Dr. Eren Ulu, Dr. Fırat Akba

This project is supervised by Deniz Cantürk, a faculty member at TEDU. Academic and technical guidance throughout the project development and execution would be provided by him. The project would be evaluated by faculty members Eren Ulu and Fırat Akba. Their expertise in field will ensure that the project is in line with the criteria of technical achievement, innovation and contribution to the field. Feedback from the supervisor and jury members is expected to increase the quality of the project and show guidance.

#### **4. Project Description**

The project is developed to enhance border security by providing surveillance and detection especially in blind spot areas that can't be reached by human patrols. The system is composed of cooperative unmanned aerial vehicles (UAVs) that can autonomously perform patrol operations to detect and identify threat while communicating with the command center continuously in border areas.

The swarm coordination will allow the UAVs to operate collectively to cover the border line without blind spots. Drones are designed to detect unauthorized behavior, localize this and send on time information to command center. Continuous intercommunication of UAVs enable adaptive response to attacks and environmental conditions.

System is planned to operate on real time data analysis allowing detected activities to be classified as normal or risky. Human workload is estimated to be reduced by automating the detection process while enhancing the efficiency and responsiveness of the operations.

The project is also designed to provide safety and avoidance behaviors for drones that makes them remain in a safe distance from each other and from the environmental factors. Aim of this is to ensure reliability, adaptability and continuity of the mission under differing conditions.

In summary, this project is expected to be an innovative approach to border surveillance by using autonomous swarm of UAVs designed to ensure safety, efficiency and continuity in missions.