# **Mine Detection Drone**



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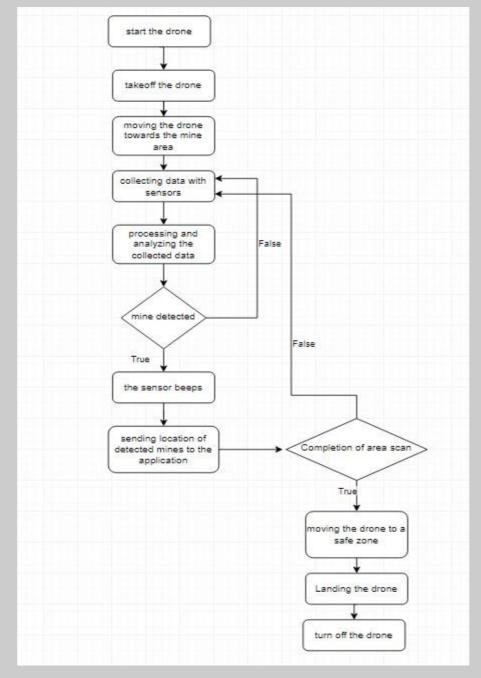
## **Çankaya University, Department of Software Engineering**

#### Abstract

Project involves the development of a mine detection aerial vehicle designed to enhance human safety by detecting landmines. The drone will be remotely launched from a secure location and navigated to a designated area for mine scanning operations. The user interface is developed using appropriate design software to facilitate interaction between the drone operators and the drone.

#### Introduction

Mines have been used historically in military operations to slow enemy advances, cause material damage, and inflict casualties. Traditional ground-based mine detection methods are slow, hazardous, and often lack definitive results, necessitating the development of safer and more efficient technologies. This project aims to develop a rotary-wing unmanned aerial vehicle equipped with advanced mine detection sensors to enhance operational safety and efficiency. By maintaining a safe altitude of at least 40 centimeters above the ground, the drone will detect mines without triggering them. The project will focus on ensuring flight capabilities, seamless stable integration of mine detection technology, and robust data processing for GPS mapping. An intuitive user interface will be created for efficient control and monitoring. This innovative approach aims revolutionize mine detection by to leveraging drons to provide a reliable and safe solution in mine-affected areas.



#### Figure 1 – Activity diagram

### **Results & Conclusion**

Coding was done using Arduino for the flight control software, communication between the drone and the controller, distance and mine sensor.Transmitting the information received from the drone to the UI.

### Acknowledgement

We would like to thank our advisors Bilgin Avenoğlu, Samet Akar and Ayşe Nurdan Saran for their support.





Figure 2– Mine Detection Drone

Onur Doğar

Software Engineering Team

#### Figure 3– Mine Detection Drone

#### Coordinate prigin : float()()( ( : float z : float + setOrigin(origin : float[][] + setX(x : float) : void + setY(y : float) : void + getZ() : float setZ(z : float) : void ArduinoControlle controlDrone() : void Drone DesktopAp location : Coordinate + login() : bool distanceSensor : DistanceSens + isConnected() : bool mineSensor : MineSensor controller : ArduinoControl + receiveData() : void mines : Coordinate[] DroneOperator - getLocation() : Coordinate + setLocation(location : Coordinate) + getMineSensor : MineSensor username : string password : string Sensor (abstract) start() : void stop(): void metalSensor : MetalSenso tvpe : string getUsername() : string startSensors() : void setUsername(username : string) getPassword() : string activate(): void + deactivate() : void + getReading() : void setPassword(password : string) : voir detectMine() : boo stanceSensor (implem Sensor) MetalSensor getAltitude() : float detectMetal() : bool

Figure 4 – Class diagram

# Team Members

Computer Engineering Team



Mechanical Engineering Team











