Accident Inspection and Reporting by Drone Technology

Team 89

Introduction/Background

Problem Statement

Our project is about drones that monitor accidents instead of the policeman. The main reason for choosing this project is to minimize the time consumed in the traffic and to minimize the time wasted and effort for the workers. The drones will take many stations and the stations will be distributed based on the most frequent areas that suffer from accidents. The stations will be for maintenance and refueling or recharging. The drone will be enhanced and developed to take all the needed documentation for this process.

Project Impact

Drones have positive impacts on society, economy, ethics, public health, safety, and welfare. They help quickly resolve accidents and provide better views for experts. Drones enhance city security and can reduce traffic congestion, saving time and increasing productivity. They create job opportunities for drone pilots and mechanics. While there are privacy concerns, measures will be taken to protect privacy and improve quality of life. Drones also help reduce emissions by replacing vehicles and improving public health. They enhance safety by responding faster to accidents and minimizing risks. Drones provide welfare benefits through faster accident reporting and fair video footage.
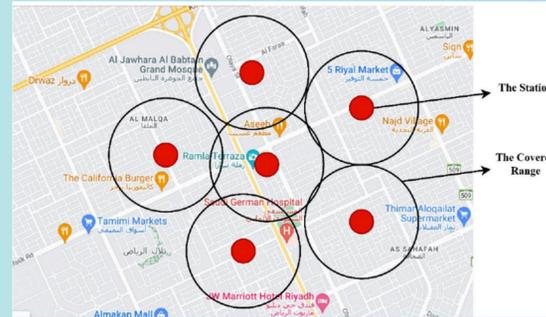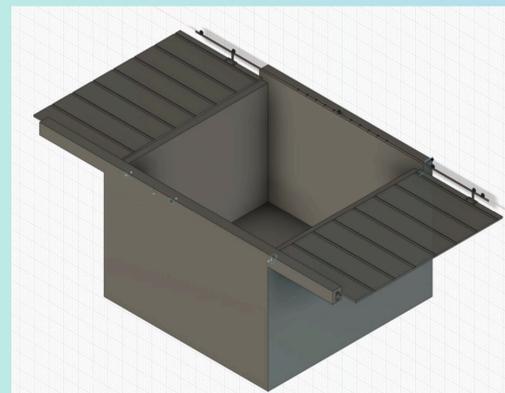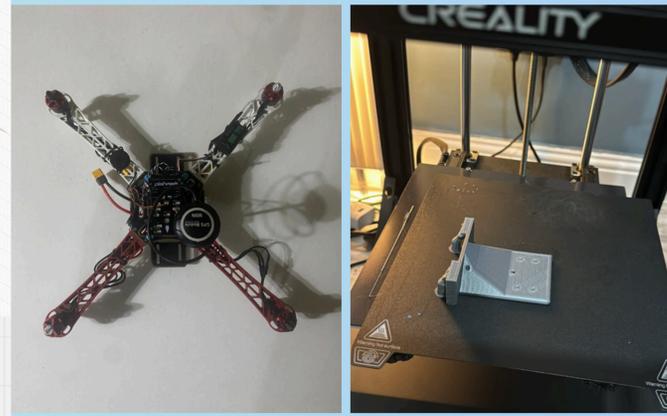

Constraints

• The drone should reach 30 meters in altitude: so that it stays in the range of the cellular communication system and fly above obstacles.
• The drone should keep flying for more than 20 minutes in the air: So that it has enough time to go back and forth from the incident location in one operation.
• The drone should reach the accident location within 10 minutes: so that the police men can inspect and analyze the accident quick enough.
• The drone should not pass any restricted area: to preserve the privacy of the citizens and residents of the area and respect the law and order of the land.
• The drone should be designed to be safe in case it was dropped: to protect the public from any potential mistake or emergency situations.

Testing / Validation

Specification	Tested performance (if possible)	Remarks
1	34 km/h	In theory has max 80 km/h
2	N/A	Cannot be tested
3	31 meters	-
4	Camera res is 1920p x 1080p	-
5	N/A	In theory it can cover higher than specified range
6	30-60 fps	30fps with 1080p, 60fps with 720p
7	91 Wh	-
8	N/A	Cannot be tested
9	1.79 - 2	Normal - max setting

Conclusions

In conclusion, our project aims to use drones for accident monitoring and reporting, reducing traffic congestion and minimizing worker effort. Strategically placed drone stations allow quick deployment to accident sites. Drones will be controlled from an operations center, ensuring efficient response. Safety measures will prevent harm and minimize damage. High-resolution cameras and effective communication systems will be utilized. A user-friendly software interface enables remote drone control. Overall, our project improves accident inspection and reporting using drone technology.
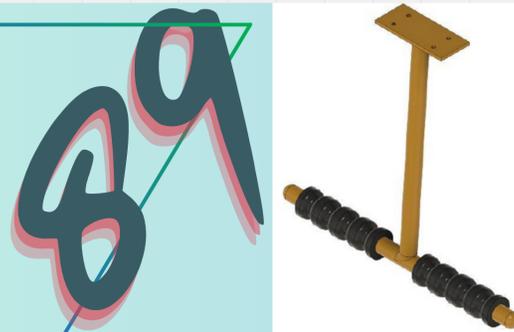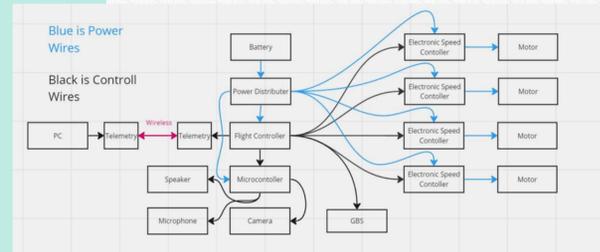
Prototype Design

Target Specifications

1- The speed of the drone should reach ≥ 30 km/hr.
2- Camera of full HD resolution (1920 x 1080 px) or more
3- The report should be taken in ≤ 10 minutes.
4- The altitude of the drone should reach ≥ 30 meters
5- The covered range should be 3000 ≤ covered range ≤ 5000 meters.
6- The number of frames for the camera should be ≥ 60 fps.
7- The battery has a capacity of 25 Wh.
8- The distance between each station should be 7.5 km.
9- The drone should have a thrust-to-weight ratio of at least 2:1

Dpeartments	Team 89 Members Names	
Industrial and Systems Engineering	Mr. Faisal Almani	Mr. Abdulaziz Alsakrani
Aerospace Engineering	Mr. Meshal Alharbi	Mr. Bassam Alkhaldi
Electrical Engineering	Mr. Mutlaq Alshammari	Mr. Bader Alkharji