RAJASTHAN POLICE HACKATHON

ANTI HOSTILE DRONE SYSTEM

TEAM ZEUSS

REGISTRATION NO. 563

Advancing Policing with Cutting-edge Technology

USE CASE (Problem Statement):

- Developing a drone system for police operations to enhance public safety and combat crime.
- Enhance the police's ability to watch large crowds during public events or protests and aiding in identifying in potential issues in public safety.

Approach to the Problem :

1. The system design should be simple enough that a regular policeman can be trained to operate the solution by short duration training only.
2. Emphasize the need for a solution that integrates advanced features while managing costs and optimizing drone performance.

Solution - Prototype

We , team Zeuss has developed a Drone System to assist the Police forces in enforcing law and order at a public site.

Technical features:

It's a quadcopter design with the following featu

- **40 min. flight time**
- **1.2 kg remote range**
- **Autonomous operation**
- **2 km remote range**
- **5G technology**

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4-step workflow

#1

Area selection

Parameters like the area to be surveillance, what kind of situation(crowd control, human rescue, etc are identified.

#2

Mission plan

A drone mission is planned on the interactive software by the policeman on ground.

#3

Autonomous surveillance

The UAV perimeters the area specified constantly looking for issues and potential threats(like firearms, etc)

#4

Alerts

Alerts are send live to policeman on ground like (more than 4 people gathering during sec 144, people in no entry zones, detected firearms, etc)

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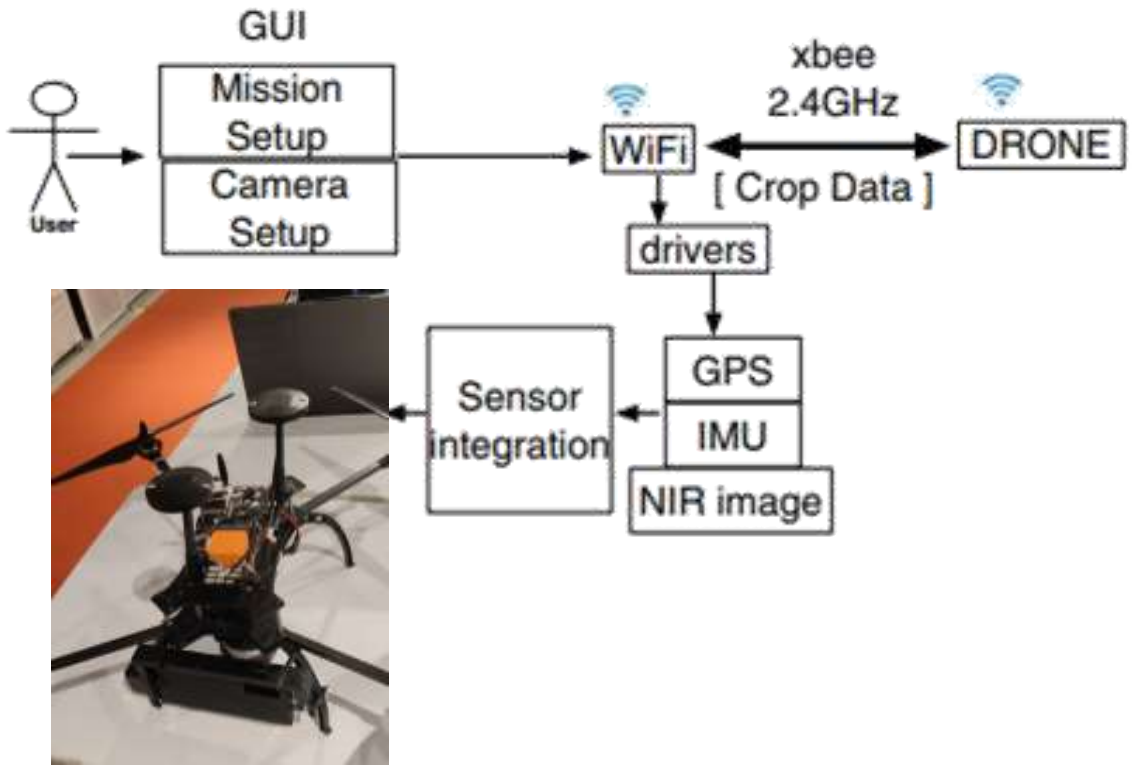
Data collection

1. A mission is planned by the drone operator to scan a area at a suitable height (around 50m) above the ground to perform surveillance.
2. Camera onboard sends the video feed to the ground station.
3. Live video is processed through image processing in real time.
4. The output alerts , annotated real time video is shared to the user .



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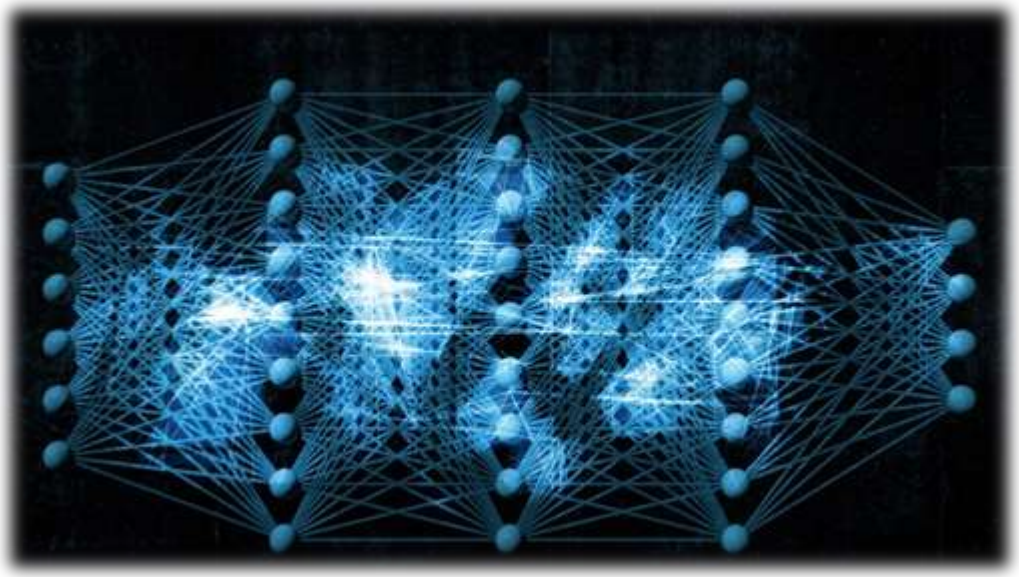
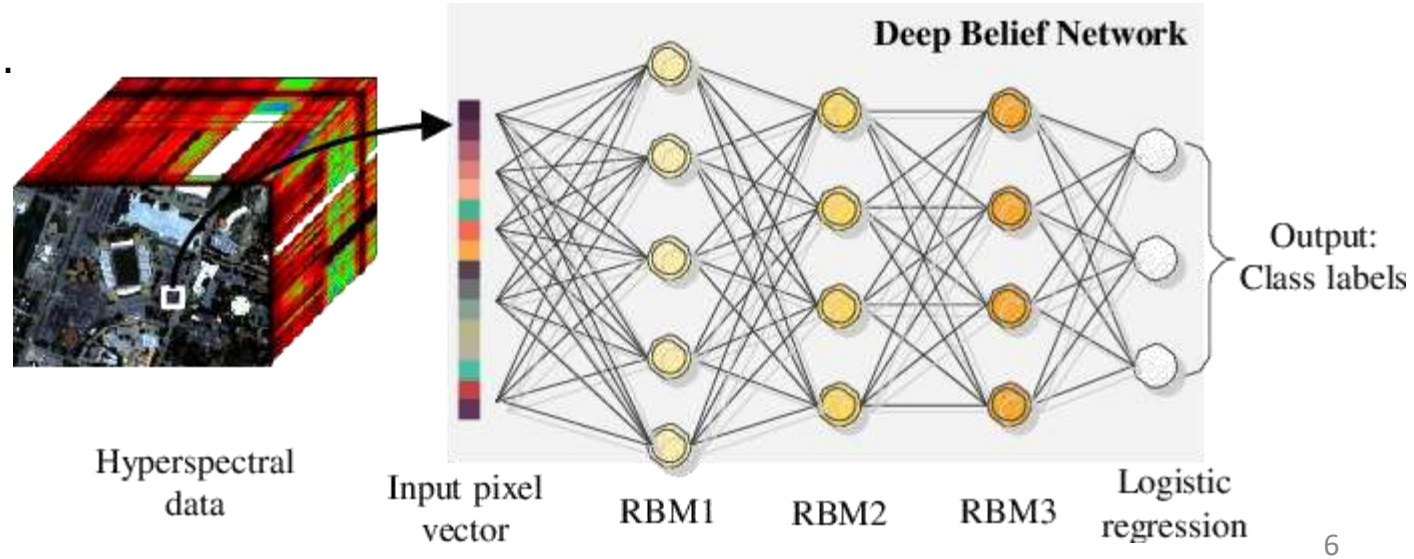
AI model features

1. Detects people in the picture , how many of them , how crowded or disperse they are, etc
2. Detects firearms if they come in the picture.
3. Detects an injured person in the picture.





Crop throughput estimation using UAV | Drone

Advantages

Simple operation

- The interface designed for the user is kept simple and easy to understand so that it becomes easier for policemens to learn it's operation

Highly Time efficient

- Drone can be deployed in the field and take off within 2 minutes.
- Can scan upto 600 Acres of land per day per

Non-intrusive | No harm to public

- Non-intrusive approach causes no-harm using UAV/drone approach, whereas human-measures can be intrusive.

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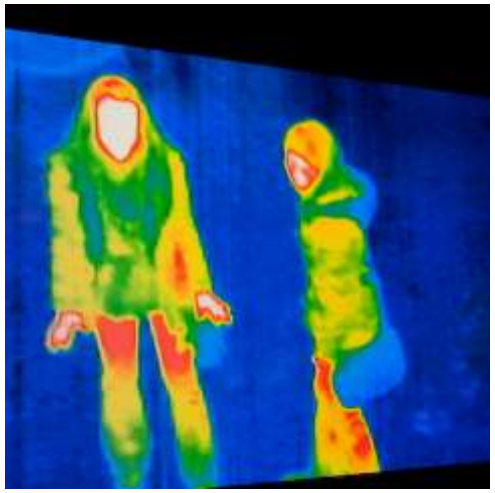
Additional features

Smoke bomb dropping

If the need arises to drop smoke bombs to control or disperce a violent crowd, the drone can carry a smoke bomb onboard and dropped on command.

Public announcement

The drone is equipped with a speaker that can perform public announcement features in not so accessible areas.



Rescue operation

If the need arises , the drone can carry a thermal camera too , that enables it to see human activity in pitch dark environments.

That can play a key role in night rescues .

Thanks to the people involved in organising this hackathon and giving us the opportunity to present our idea.