Drones for Detecting and Analysing anti-terrorist Activities

Drone addiction and use is constantly increasing in many areas. This is due to the drone's ability to provide live streams, real-time video and image recording, and the ability to skip and transport goods. As a result, more than 10,000 drones will be commercially available over the next five years. This is primarily due to its higher cost and budget than commercial helicopters. In addition, technological advances have made it possible to fly mini drones with a simple operation via a smartphone instead of using a remote control. In fact, the use of drones is not limited to commercial or personal purposes. Drones are used by law enforcement agencies and border control oversight teams. It is used by search and rescue teams to collect information and store important supplies in the event of a natural disaster. However, drones are not only used by "good people." The "bad guys" use drones to achieve malicious goals. Drones are easy to control and can be used for a variety of attacks. Drones, on the other hand, reveal security loopholes that make them vulnerable to hijacking. This paper outlines drone attacks / attacks on drones and their countermeasures.

Abstract:

Drone reliance and use is increasing in a variety of fields. This is due to the drones' ability to live-stream, capture real-time video and images, and fly and transport goods. As a result, thousands of drones will be operational in the next five years. As in every field, drones are used in detecting and analysing anti-terrorist activities i.e., to spy on the terrorists. Drones provide more advanced surveillance, and the usage of artificial intelligence makes the risk identification and decision making more effective and instantaneous. Drones are now used for advanced observations and covert operations because of their quick access as well as their precise targeting capability. Using a pre-trained machine learning model, the drone finds, tracks, and follows another drone within its sensor range and hunts it with a laser beam. Mounting the lasers on drones lets the authorities quickly move them close to the action and respond.

High-tech devices have been developed to assist them in dealing with a variety of situations that may arise during their mission. The location of an army person can be

determined with the help of a drone. Chips implanted in the bodies of soldiers will aid in the differentiation of army person from terrorists, and this information will be used to launch a laser attack on the terrorists.

Motivation:

Reliance on wireless communication makes drones vulnerable to a variety of attacks. These attacks can have dramatic impacts, including commercial and non-commercial losses. In this context, there is a lack of understanding of how hackers can launch attacks and hijack drones in order to intercept or bring them down. In fact, drones can also be at risk for malicious purposes. Therefore, you need to be aware of them and prevent them from doing any harm.

Objectives:

1. The primary object of the proposed invention is to detect the location of soldiers in GPS denied areas.
2. Yet another object of this invention is that the action of terrorists using a camera on a drone.
3. Yet another object of this invention is to differentiate between the soldiers and terrorists through sensor chips.
4. Yet another object of this invention is to keep an eye on our soldiers when they are on secret missions.
5. Yet another object of this invention is that the soldiers send messages or clues to the team when they are on secret missions.
6. Yet another object of this invention is to destroy the enemies and their spying drones through laser emitters
7. Yet another object of this invention is to kill the enemies by detecting chips by emitting laser beams on them.
8. Yet another object of this invention is that the overall objective of this system is to protect our soldiers and keep an eye on terrorist activities and destroy them.

Brief Description of Drawing:

This invention is described in the following diagram:

Where **Figure (a) is Front View,**

1 denotes Drone,

2 denotes Camera,

3 denotes Wings,

4 denotes Microprocessor,

5 denotes Scanner,

8 denotes Laser Beam Emitter

A detailed description of The Invention:

1. **Drones:**

   The drone is meant to help India's armed services and security forces carry out their most difficult surveillance duties. It has a longer flight time and can-do high-altitude operations with fail-safe redundancy for added safety. In the case of a communication failure or signal loss in one of the GPS modules, the drone uses multiple global positioning system (GPS) sensors to provide incremented reliability and also fail-safe redundancy. In addition, the drone carries medium-range and long-range electro optic sensors in a modular payload pod mounted under the nose for capturing imagery and video.

   In extreme wind conditions or when the aircraft's charge is low, the aircraft's built-in fail-safe measures allow it to safely return to its home location.

2. **Camera:**

   The ZED is a passive stereo vision camera that reproduces images and videos the way human vision works. As it is having two eyes, using its two “eyes”, the ZED creates a three-dimensional map or say image of the scene by comparing the displacement of pixels between the left and right images.

   ZED is the world's fastest depth camera. It captures 1080 pixels HD video at 30FPS (Frames per Second) or WVGA (Wide Video Graphics Array) at 100FPS and gets a crisp and clear high-resolution image.

   It is compatible with Windows (7, 8, 10), Ubuntu 20, 18,16 Operating System.

3. **Wings:**

   Wings of the drones are the part of the drone which will help them to fly greater heights and maintain balance.

   They will be fitted to drones and will start spinning as soon as the drone starts.

   The wing will have 3 fans which will be rotating in an anticlockwise direction.

   The drone will have four wings with three fans each. The fans will help to resist air and smoothly make the drone fly high.

4. **Microcontroller:**

   Raspberry Pi as a Microcontroller:

   The Microcontroller needed to be used is the Raspberry-Pi, the reasons behind this to choose it as a micro-controller are:

   - It is Practical, Portable, and inexpensive.
   - It provides an inbuilt OS (Operating System) which makes it easy to get started.
   - Built in Wi-fi module, Bluetooth.
   - The 2.5 amps Power source to drive up more intricate USB gadgets.
   - 1GB Memory,400 MHz GPU,4 USB Ports,
   - HDMI video output with 3.5mm jack, 17 GPIO Pins,4. Iv Bluetooth.
   - 5 volts power source, Micro USB or GPIO header.
   - Its weight is about 45 gm and dimensions are about: 85.60 mm x 56.5 mm
   - Using raspberry pi complete system functionalities is operated. It has a processing unit. Thermal camera will be connected to it which will capture the images and videos of the terrorist and the soldiers.

5. **Reader / Scanner:**

   The scanner will be used to scan or detect the chips implanted in the body of soldiers. The scanner will particularly scan the chips and send the signals to the microprocessor. After that microprocessor will process that data and send the signals to the fire database and the computer.

Figure (d) indicates Microchip Implantation

9 denotes Microchip,

10 denotes Hand

A detailed description of The Invention:

9. Microchip:

Human microchip implants are electronic devices that are implanted subcutaneously (subcutaneously). One example is an RFID device that is surrounded by silica glass and has an integrated identification circuit embedded in the human body. These types of subcutaneous implants typically contain a unique ID number that can be linked to data from external databases such as: B. Personal identification, law enforcement, medical history, dosing, allergies, and contact information. RFID chips can be divided into two types: Active RFID chips have their own power supply, which is usually a battery. Passive RFID chips draw energy from the electromagnetic waves of the leader antenna and direct current to the RFID chip's antenna. The proposed system uses a passive RFID chip.

10. Hand:

Hand of Soldier

Figure (e) indicates Complete Working of the System

6 denotes Computer,

7 denotes Fire Database

A detailed description of The Invention:

6. Fire Database and Computer:

As soon as the microprocessor sends signals to the database and computer it will process it.

Basically, the fire database will be connected to the computer and all the scanned items and the things recorded by the camera will be displayed on the computer on the workstations and the intelligence team will get information of each and every second.

Detail Description of Process

In order to keep an eye on the terrorists and hunt their drones and to keep track of the

activities of our soldiers this system is proposed.

In this proposed system that is to detect and analyse anti-terrorist activities, there will be the use of majorly drones, laser rays and microchips.

Infrared Thermography (IRT): IRT has been used in various industries for many years. On the other hand, recent advances in advanced thermal imaging cameras have used focal plane arrays (FPAs) that use uncooled microbolometers as FPA sensors. IRT has long been used in military applications. Hyperspectral Imaging (HSI): HSI is a new area where the advantages of optical spectroscopy as an analytical instrument are combined with 2D object visualisation of optical imaging.

The following steps are included in the drone hunting process:

- **Detection:**
    a) Drone Detection Using Radar
    b) Drone Detection Using a Camera
    c) Moving Objects Detection

- **Classification and identification:**
    a) CNN Image Classifier
    b) Moving Objects Classification.

- **Tracking and Locating:**
    To track an object (target) in a series of image sequences, we use the multiple hypothesis tracking (MHT) method. SIFT characteristics are used to describe the visual content of aerial photographs of UAVs. The MHT structure is built on the basis of the multidimensional assignment formulation and the sliding time window technique.

- **Hunting:**
    Laser Beams are used for hunting.

The drone will be having various components inbuilt in it in order to make our mission successful. The drone will have wings which will help them to fly greater heights and will also resist heavy winds in desert areas.

The next component will be the camera. The camera will be situated at the bottom most part of the drone because it will take a picture of all the things happening on the Warfield and give a

clear view of the war. The camera used in it will be ZED Camera. ZED camera is a human vision camera which works very similarly to the human eye. It has two eyes which help it to take a clearer vision of the things.

The next component is the scanner. The Scanner will be used to scan the chips implanted in the soldiers. Our soldiers will have chips implanted in their bodies. This will be to keep a track on them so as if they are in difficulty or in the clutches after scanning their location the entire surveillance team will come to know about them and they can take actions immediately. And also, the chip will have the features like if the person in front is speaking anything it will record and immediately send all those audios to the surveillance team i.e computer through the microprocessor and the fire database. This will help our secret team to know the plans of enemies if any of our soldiers is in their clutches. And in the worst case if the enemies came to know about the chip and tried to take it out of the body of the soldier the chip would get automatically destroyed.

This is all about the chips which will be implanted in the soldiers. Those chips will be totally feasible to put in the human body. Such kinds of chips are available in the market.

As we are having a drone to spy on enemies, enemies may have it, they can also spy on our soldiers. So taking this into consideration, there is a point called drone hunter. Drone hunter is the drone itself which will be hunting another drone and the enemy soldiers. It will be easy for the drone i.e microprocessor to detect the enemy's drone so it can easily hunt that drone. But the challenging part is how to detect which is our soldier and which one is the enemy so for that we have implanted chips in the bodies of our enemies so after scanning every time the drone will come to know that this is our enemy do not kill it else kill it.

So now the question is how exactly will the drone kill the enemy drone and the enemy?

For this there will be laser rays' emitters in the drone. Laser rays will be so powerful that the drone will destroy as soon as the rays fall on it and the humans too. We can also keep original bullets in the drone to destroy drones but that will increase the weight of the drone and will resist it to fly greater heights. The proposed system enables to detect our soldier as well as to save them from threat and it will alert the solider if any terrorist is nearby them. If there is an allergic issue in installing a chip in the body of a soldier then we can implant the RFID tags in the rifle of that soldier, as each soldier has their own rifle.

Working of Microchips implanted in Soldiers:

The microchip which is being used is a RFID chip and will be installed in the hand of the soldier and it will be wireless, it will work on radio frequency waves.

The waves will be UHF i.e., Ultra-High Frequency waves (860-960 MHz)

The waves can travel a maximum distance of 10-15m, and if a reader is present within this range, the chip will be scanned.

The chip being scanned will contain information about the soldier whose chip is being scanned. So, if the chip is scanned in an unfavourable location where the soldier has no chance of being, it alerts us that our army person is in danger, and we can try to escape him by shooting the people who are grabbing our soldier with our drone's laser.

If a soldier is allergic to having the chip installed, we can install RFID tags in the soldier's guns or rifles.

The tags, like the chips, will emit UHF waves and can travel a maximum distance of 10-15m.

This information will be collected by the reader or scanner located at the bottom of the drone, which will transmit the message to the microcontroller located at the top of the drone, and this message will be transmitted to the base station.

If a chip is not scanned, it means the person does not belong to our country, and we can shoot them with a laser beam.

The base station person will activate this laser beam after confirming that person, and for confirmation purposes, we have a camera with us in case an innocent person is not affected in a high alert area.

This system is used in high alert areas.

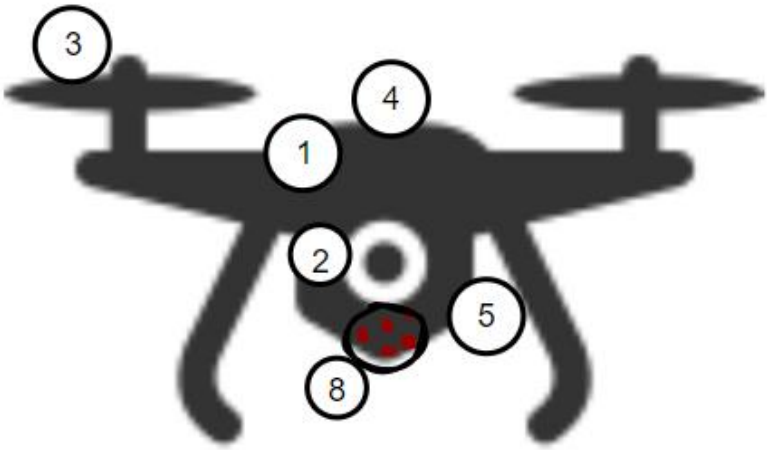

Figure (a): Front View

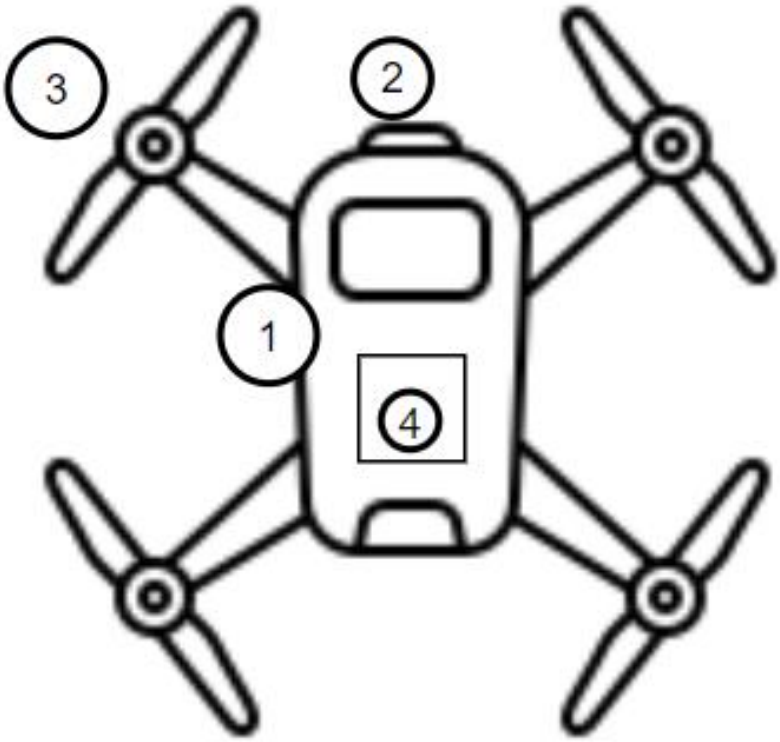

Figure (b): Top View

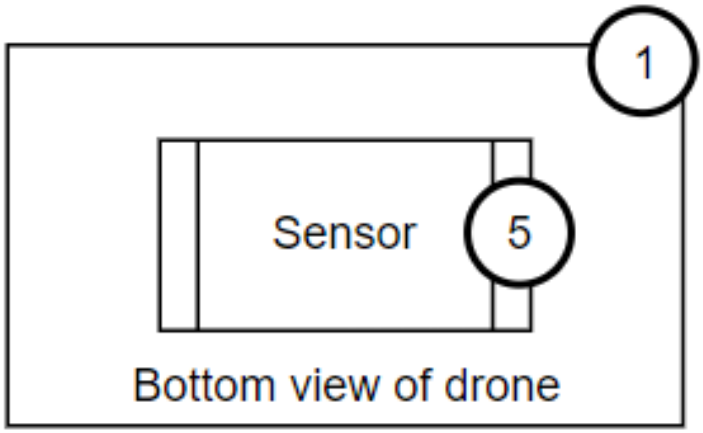

Figure (c): Bottom View

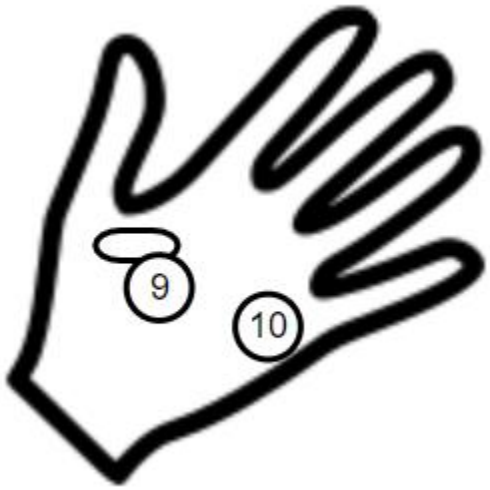

Figure (d): Microchip Implantation

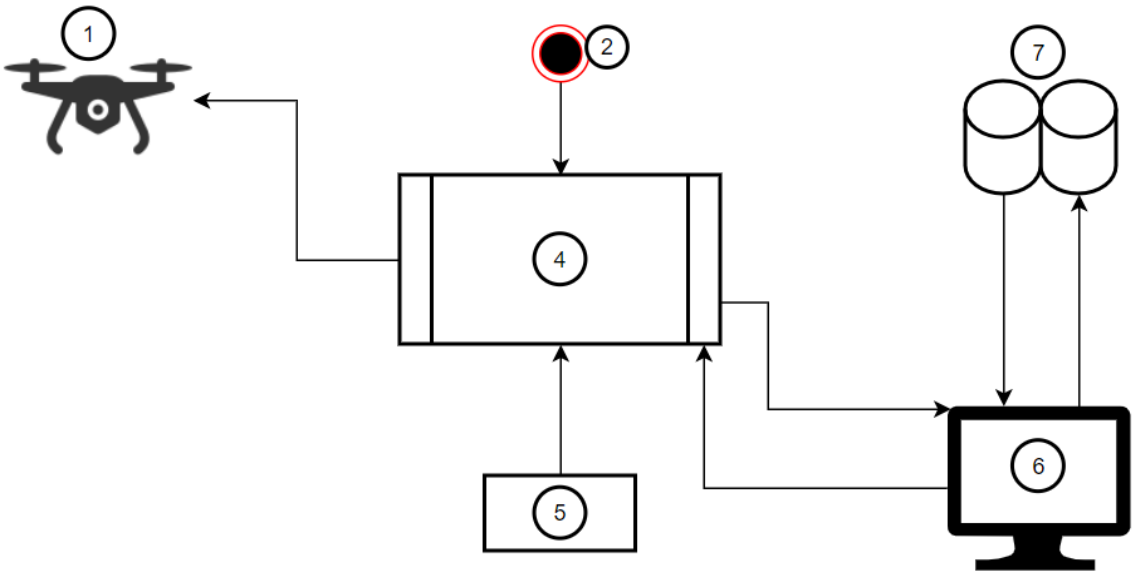

Figure (e): Complete Working

Advantages:

The advantages to the drone spying technique are as follows:

1. **Security:**

   The very first advantage is security, security of soldiers and security of the nation. By spying the activities of terrorist's intelligence team will come to know about their intentions and will be pre-prepared to face difficulties and in many cases can even resist the problems. By seeing the exercises of psychological oppressors' insight group will come to have some familiarity with about their aims and will be pre-arranged to confront troubles and much of the time can even oppose the issues

2. **Concealing our Information:**

   As we are keeping an eye on the enemies or say terrorists, they can likewise keep an eye on us and attempt to hurt our foes and drones as well. So, utilizing the laser pillar we will be penetrating the foe and its drones. So, this will assist us with staying discreet.