

# Camouflage Drone with Facial Recognition using AI

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**Abstract:-** This drone is a exciting example of how technology can build or create new possibilities for future. This is a camouflage drone with the ability to change its colors which will make it invisible to our naked eyes. Artificial intelligence is also used in this drone which enables it to dodge any obstacle on its own without any commands and also recognize different facial structure with the help of mini spy camera. AI drones are equipped with advanced computer vision systems using cameras and sensors to accurately perceive the surrounding environment. Drones can take over. Facial images used for biometric identification. Protecting Civilians from criminals is getting difficult every day for authorities and governments. Meaning Several steps are necessary to protect citizens from criminals. They are also criminals in crowded places. In this paper, we will cover state-of-the-art facial recognition. The drone technology are one type of robot that is becoming increasingly popular and useful.

**Keywords:-** (Color changing, AI, live GPS tracking, drone, Haar Cascade Classifier, Face recognition)

## I. INTRODUCTION

Drone itself is a fascinating creation of mankind but what if a drone can be untraceable and invisible to naked eye. Computer technology has a major role in facilitating human life. Many countries are known to have used these technologies to spy on each other, but the information is not yet clear. Previously, drones were used for military purposes, but now they are used for a variety of operations, such as providing food during natural disasters and monitoring various climate changes. Drones are primarily used for combat surveillance and tactical reconnaissance. The drones being built are for military, agricultural, rooftop photography, illegal activity surveillance, and other amazing activities.

### ➤ Concept

The camouflage blends the object with its surroundings and prevents it from being traced. We are developing this project to implement a camouflage drone that will be able to locate the enemy, transmit coordinates to the military in real time, and gather information about specific targets through video recording. The drone that is manufactured must be in good hands like a private company or government so that there will be no corruption and the drone signals can be monitored by higher authorities so that the authorities can notice the difference in the signals and take action on the spot.

## II. LITERATURE REVIEW

- Camouflage technique is a multipurpose robot containing Bluetooth module with GPS tracking is used for its longitudinal and latitudinal location of the device or robot.
- It also has accelerometer and gyroscope module which makes the robot stable while its flying.
- In this section, we will discuss OpenCV Search algorithms and drone technology. Various Researchers have been studying these technologies.
- The use of drones is the most effective method of identification Face to face at a certain distance. We are using the Raspberry Pi model because it is small.

## III. OBJECTIVES

- Make the drone visually untraceable.
- Provides soldiers with real-time coordinates of the enemy.
- Provides real-time video of enemy territory.
- Develop the robot that can Analyze faces different.
- These robots are designed with automatic decision making and are able to make decisions like humans based on a number of factors.

## IV. HARDWARE IMPLEMENTATION

### A. COLOR SENSOR

In this robot we are using TCS3200 color sensor which helps to detect the color and display color through Light Emitting Diode (LED) which helps the drone to camouflage itself. This TCS3200 color sensor module uses a high-quality optical sensor, which can detect all colors in combination with red, green and blue. This module provides all the features of the TCS3200 in a convenient 0.1 header that is ideal for use with PCBs. Four white LEDs provide enough light for the color sensor and allow the module to be used in any ambient light.

#### Specification of Color Sensor (TCS3200)-

- Maximum Input Voltage - 2.7V to 5.5V
- The Output can be programmed.
- This sensor can provide power down saving feature.
- It connected directly to raspberry pi model 5.
- S0~S1: Provide output frequency
- S2~S3: Inputs is provided
- OUT Pin: This Output is indirectly connected to LED strip.

- OE Pin: The Raspberry Pi input line outputs in a high impedance state for multiple device sharing.

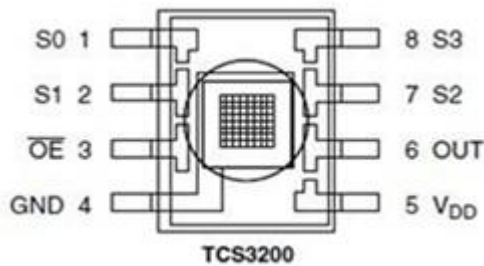


Fig 1- Shows the pin out of TCS3200

**B. BLDC Motor**

BLDC motor operates in brushless DC mode. Due to its size and efficiency. This small but powerful electric motor uses direct current as its power source. BLDCs are becoming more and more popular, and applications that use BLDCs are also becoming more popular.

**Specifications of BLDC Motor-**

- Brand REES52
- Manufacturer REES52
- Country of Origin India
- Model number a2212 motor | 2200kv brushless motor
- Number of Memory Sticks 1
- Item Weight 80 g
- Item model number a2212 motor | 2200kv brushless motor
- Voltage 10 Volts

**C. Bluetooth Module**

A Bluetooth module is a basic set of circuits on a chip that can be used for wireless network transmission by integrating Bluetooth functionality. In general, Bluetooth modules can be divided into the following types: vacuum transmission modules, remote control modules, and so on. For our device we have used Bluetooth Module for controlling the drone.

**Specifications of Bluetooth module (HC-05)**

- Its reactivity is upto -80dBm.
- Transmitting power is upto +4dBm RF.
- Low Power 1.8V Operation ,1.8 to 3.6V I/O
- Its transmits and receives information.
- Program Input Output is a method of transferring data between devices in a computer where all data must pass through the raspberry pi.
- It has integrated antenna.
- It is an edge connector.

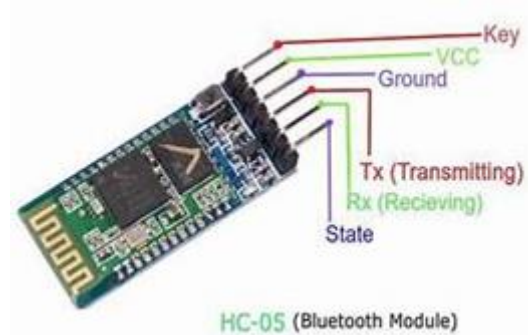


Fig 2- Shows the Pin out of Bluetooth Module (HC-05)

**D. GPS Tracking**

Abbreviation of Global Positioning System is GPS. GPS is a navigation system with space station in mid Earth orbit that transmit microwave signals and help customers determine location, direction, and time GPS is used worldwide for a variety of purposes, including tracking, surveillance, and scientific research. This device enhance the performance of controller.



Fig 3- Show GPS tracker

**E. MPU 6050 MODULE**

The MPU6050 is a MEMS (Micro Electro mechanical System) 3-axis vibration sensor with a 3 axis spinner. It helps in measuring rate of change of velocity, speed, direction, repositioning and many other parameters related to the motion of the device. This module also has a sufficiently powerful Digital Motion Processor (DMP) to perform complex calculations, freeing up microcontroller functions.

**Specifications of MPU6050 Module-**

- Power Supply: 3-5V
- Communication Type : I2C protocol.
- It has built in 16 bit ADC and DMP.
- Provides high accuracy.
- Provides high computational power.
- It can be used to interface with other I2C devices.
- It has 7 or 10 bits I2C Address.



Fig 4-shows MPU6050 module

**F. Raspberry Pi**

Raspberry Pie is not only a very inexpensive computer that runs Linux, but it also provides a set of general-purpose GPIO input and output pins that can control electronic components for physical computing and explore the Internet of Things (IOT). Raspberry Pi computers are equipped with IOT technology. It was originally created as a computer running a programming language.

Specification of Raspberry Pi Model-5-

- RAM memory – 4GB
- Processor Speed – 2.4 GHz
- It has real time clock (RTC)
- It includes 64 bit quad core
- Power Switch
- It also has Arm cortex-A76 Processor which runs at 2.4GHz.



Fig 5- Shows Circuit Diagram of Raspberry Pi

**G. Flight Controller F4**

F4 Flight controller Specifications: -STM32 F405 MCU, Runs Ivan 1.9 firmware -SBUS/PPM AND Spectrum DSMX Ports -Input voltage Lipo (26S) -Drag and Drop OSD configured via INAV Configuration -On-board Video Filter(only can supply 5V to VTX and Camera) -MPU6000 6 axis SPI Gyro & Accelerometer -Only 36x36mm, mount holes 30.5x30.5mm -Barometer BMP280 -SD Card slot -5v3a SBEC -Uart 1 for GPS, Uart 3 for compass Uart 6 for Receiver

**H. Artificial Intelligence**

Artificial Intelligence The AI Intelligent drone integrates an advanced commuter vision system that uses cameras and sensors to accurately perceive the environment. These systems can navigate complex terrain, find and avoid obstacles, and perform precise maneuver. The use of drones is the most effective method of identification. Face to face at a certain

distance. We are using the Raspberry Pi model because he's small you can take many pictures at once search for human faces using the Haar cascade classifier the LBPH algorithm for human face recognition the trained dataset. In AI we have used python language for face recognition.

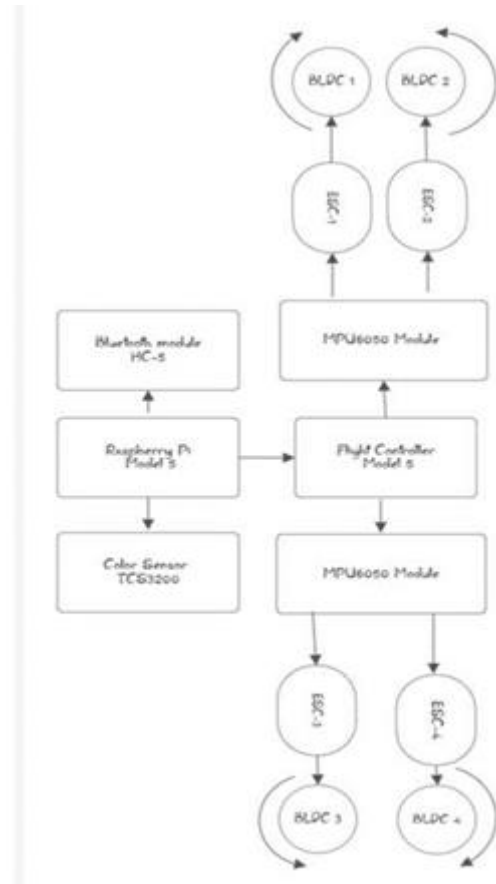


Fig 6 System Block Diagram

**V. CONCLUSION**

This project is based on color changing and artificial intelligence with it we are able to track our enemy and get live location of the robot. Camouflaging the drone with the background detects and displays the surrounding colors, increasing the uniqueness of your project. The drones produced are managed as securely as private companies or governments, so there is no corruption ,and the drone signals can be controlled by higher authorities, so the authorities can notice differences in the signals and lead us away. Work on site.

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