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Urban Plantation UAV

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***Abstract*-In recent days we can see that Air contamination is expanding step by step on account of the developing number of vehicles, arrival of harmful gases, smoke from mechanical organizations, finely broken down solids, fluid pressurized canned products, and so forth in the air. The air we inhale each minute causes a few lungs issue. Trees can clean the air and assimilate destructive airborne particles and vaporous contaminations. In one year, a section of land of develop trees retains a similar volume of carbon monoxide as delivered from a 26,000 mile vehicle venture! Besides cleaning the air for us, trees supply us with new oxygen to relax, and aim of this drone is to plant trees in urban Area using AI.**

Keywords: **UAV**

I. INTRODUCTION

An urban plantation UAV can control pollution at an extreme level as it is occupied with technology that can measure air quality and can plant trees accordingly in urban areas autonomously.

This UAV is also occupied with livelihood, terrain and weather response system that can help it managing rigid scenarios, and it can charge itself from charging port present on different tower in cities.

With approx calculation single drone can plant around 250-500 trees in single day.

II. HOW UAV WORK.

This whole concept work using AI which let UAV decide itself that which terrain is best for planting trees.

This UAV is developed using-

- Raspberry Pi
- 16 channel 12 bit PWM controllers
- Carbon fiber structure
- ESC
- 12 volts 4 cell Li-po ,4400 mah Battery
- 1000kv brushless motors
- Camera
- Ultrasonic sensor
- Gas and Humidity sensor
- Temperature sensor
- Gyroscope
- Altimeter sensor

Raspberry Pi- the Raspberry Pi is a low cost, credit-card sized computer that be programmed according to need and support various modules including sensor, pwm controller, Camera, screen etc.

16 channel 12 bit PWM controllers- It's a driver to control ESC which stand Electronic speed controller which is connected to motor of UAV to attain thrust.

In PWM controller we can connect maximum of 16 ESC. PWM controller is connected to R-pi which send further command for autonomous movement.

Carbon fiber structure- Carbon fibers or carbon fibres are fibers about 5–10 micrometres in diameter and composed mostly of carbon atoms. Carbon fibers have several advantages including high stiffness, high tensile strength, low weight, high chemical resistance, high temperature tolerance and low thermal expansion.

ESC- ESC basically stands for Electronic Speed Controller which receive signal from PWM Controller for controlling rpm and thrust of motor.\

12 volts 4 cell Li-po ,4400 mah Battery- It's very efficient yet safe battery to use in UAV so it cannot harm other and if UAV crash, this battery is best for self-charging purpose.

Brushless Motor- A brushless DC electric motor provides pulses of current to the motor windings that control the speed and torque of the motor.

Camera- A high resolution camera for better information gathering and terrain detection.

Ultrasonic sensor- As the name indicates, ultrasonic sensors measure distance by using ultrasonic waves. The sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic Sensors measure the distance to the target by measuring the time between the emission and reception.

Gas and Humidity sensor- These sensor basically detect level of humidity and gas present in atmosphere where UAV is present like CO2 , SO2 .

Temperature sensor-Temperature sensor detects temperature by which UAV can plant trees that are suitable for high or low temp environment.

Gyroscope- Gyro sensors, also known as angular rate sensorsor angular velocity sensors, are devices that sense angular velocity. Angular velocity. In simple terms, angular velocity is the change in rotational angle per unit of time, for stable monitoring.

Altimeter sensor- This senor will basically sense altitude at which UAV is rovering.

III. HOW AI WORK IN UAV

Object Detection can be used to answer a variety of questions. These are the broad categories:

1. Is an object present in my Image or not? eg is there any vehicle.
2. Where is an object in the image? eg coordinate of objects like electric poles, bench etc.
3. How many objects are there in an image? Object detection is one of the most efficient ways of

counting objects. eg How many vehicle are in particular region.

4. What are the different types of objects in the Image? eg type of terrain is this like sand, soil etc
5. What is the size of an object? Especially with a static camera, it is easy to figure out the size of an object. eg What is the size of the land
6. How are different objects interacting with each other? eg livelihood like park roofs etc.
7. Where is an object with respect to time (Tracking an Object). eg Tracking a moving object like a human and calculating it's speed etc.

The workflow for Deep Learning has 3 Primary Steps.

1. Gathering Training Data
2. Training the model
3. Predictions on New Images

This UAV is programmed using python.

IV. PURPOSE

In recent research it's found that if we were not be able to control pollution till 2030 then it will be impossible to recover and then scenario will be more worst then ever by keeping above statement this UAV will work.

Aim of this UAV is to decrease pollution from environment by planting trees and plant in most polluted cities.

Cities such as Delhi, Varanasi etc are one of most polluted cities in the world and main reason are increase in Industries, Combustion Engine and Deforestation which is lack of trees. this UAV can plant 250-500 trees in a day and 10 UAV can plant 5000 trees in a day which is approx. 150000 trees in month which will definitely going to control pollution at an extreme level .

V. SCOPE OF PROJECT

This UAV can be considered in
-Swachh Bharat Abhiyan
-Digital India
-Make in India

As the making cost of this project is very much low which is approximately 15000 Indian Currency.

Others Countries can also use this UAV for Pollution and environment control.

VI. CONCLUSTION

During the research, I found so many ways in which this UAV is going to control pollution and it will be very healthy for the world.

This UAV can change future and can remove lots of Disease from world by which the whole world is suffering and struggling.

This UAV will also decrease temperature that will control global warming which leads to control in flood, landslides and earthquake and will save life.

REFERENCE

[1]. https://elitedatascience.com/learn-machine-learning
[2]. https://medium.com/nanonets/how-to-easily-detect-objects-with-deep-learning-on-raspberrypi-225f29635c74
[3]. https://www.edureka.co/blog/tensorflow-object-detection-tutorial

