Queston (d) : Three drones are made autonomous and these drones move in the target specified location according to the code given to each drone, where the complete search of the specified location for the target and prevention of collision of any two drones are taken care of. Each drone has lidar sensor by which if they come in front of any object of height 15cm, then the drone stops and measures the other dimensions of the object. If the measurement taken by lidar sensor is 15cm for both the other dimensions, then that drone uses color sensor to detect the color and as the target color is specified as green, if the observed color by the color sensor attached is not green, then the drone again continue its journey of search until it encounters an object of height 15cm and checks the object by the above-mentioned mechanism. If the color sensed by color sensor is green in the above case, then it sends this information immediately to other drones through swarm technology. As the required task is accomplished the other two drones stop searching. The block diagram is shown below. As anyone of the drone finds the target it sends the information to other two drones.

Answer :

Algorithm :

1) These drones zoom off into the sky, each one going its own way to explore. They’re like little explorer buddies!

2. Spotting **:** When one of these drones sees something standing tall or the thing that is feed Into it.

3. Checking Sizes: it stop and use their sensor to measure how big this thing is. If They’re looking to see if it’s about the size of a bout 15 centimeters all around. If it matches, inform others.

4. Colors: Now switch to their color thingy to see if this thing is green. If it’s not green, they skip that thing and keep flying around.

5. Detecton : But if they find something green, they inform it to others . Communcation with the other drones.

Now others deone too comme varify it , and if they too detect it , then if theu no have nay other taks they be just go back to the srouce coordinaio , theat is bak to the GS.

6. Final : They inform the Grounf sratkion , and the other dones about it .

Technology use :

First the use of the sensors like :

1) sensors like . Uv sensor , infrared sensors. And also the lidar sensors.

Lidar is main as it maps all the environment around it like in a 3d format and determine its distance too from that

2) Then for image clarification , we habe to use the opencv to modify the image data or filter it to detect the objcter.

3) it needed train model to detect that objcet too can be done in opencv , but still if need something else then have to ttain that model for that

4) then perform the object dimension detecting wiuth combining both of the lidar as well as the opencv to the machine larining model to idenitfuy it.

5) opencv also used for the detecion of color in the image by mpdifying the image data or the matrix.

Code :

```
import cv2
import numpy as np

def detect_green(image_path):
    image = cv2.imread(image_path)
    hsv_image = cv2.cvtColor(image, cv2.COLOR_BGR2HSV)
    lower_green = np.array([40, 40, 40])
    upper_green = np.array([80, 255, 255])
    mask = cv2.inRange(hsv_image, lower_green, upper_green)
    green_regions = cv2.bitwise_and(image, image, mask=mask)
    cv2.imshow('Original Image', image)
    cv2.imshow('Mask', mask)
    cv2.imshow('Green Regions', green_regions)
    cv2.waitKey(0)
    cv2.destroyAllWindows()

if __name__ == "__main__":
    image_path = 'path.jpg'
    detect_green(path)
```

The most importatn Software thing is to :

Mabage the algorihtn :

like how ot keep them distnat from each other
how to make their communication faster

how to make them detect each other ,

what speeed do tbey shold fly

how much throttle to the propellers

all this matters in determing the flight of the drone.

Most important one :

make the healing effect , in this if one dron ehas been shot up or stopped then not affect the all cluster should be to take that plcae and perform its funrtion or the prev one .

This way we can

maintaitn their order or the unifrom motion
and also single strucutre like not multiple one wjere assigning thje comand to tpo levels this can disrupt the healing effect so use onlu the single strcutreu .