QUADCOPTER

**Current Status :** Able to give “yaw” , “pitch” , “roll” and “thrust” with Remote Control(RC). Output from RC received and processed through Arduino(microcontroller) by using 4 equations for each motor and hence giving them their respective servo speed to run on.

Code :

#include <**Servo**.h>

**Servo** m1,m2,m3,m4;

**unsigned** long rollh,pitchh,throttleh,yawh,mx=165,mn=80,md=135,mxr=150,mnr=80,mdr=120,fmotor,lmotor,rmotor,bmotor;

**float** rolla,roll,rollx,pitcha,pitch,pitchx,throttlea,throttle,throttlex,yawa,yaw,yawx;

void setup()

{

m1.attach(3); //4 pins<3,4,5,6>on arduino used for giving processed output signals to brushless motor through ESC’s

m2.attach(4);

m3.attach(5);

m4.attach(6);

pinMode(8,INPUT); //pins <8,9,10,11>on arduino used to obtain input signals from receiver which are sent through transmitter , pins are for yaw ,pitch, roll and throttle

pinMode(9,INPUT);

pinMode(10,INPUT);

pinMode(11,INPUT);

Serial.begin(115200);

}

void loop()

{

rollh=pulseIn(8,HIGH); //mapping is done here i.e. conversion of received signals which ranges from 1200-1850ms to

pitchh=pulseIn(9,HIGH); // servo readable data which ranges from 0-180 BUT here we have we map

throttleh=pulseIn(10,HIGH);// it to only certain values of servo which ranges from 80 to 165 <because of practical reasons>

yawh=pulseIn(11,HIGH);

rolla=rollh/20;

roll=map(rolla,0,1000,0,255); //mapping it

rollx=map(roll,13,24,mnr,mxr); ///mapping it to max and min speed of servo motor

pitcha=pitchh/20;

pitch=map(pitcha,0,1000,0,255);

pitchx=map(pitch,12,22,mn,mx);

throttlea=throttleh/20;

throttle=map(throttlea,0,1000,0,255);

throttlex=map(throttle,13,23,mn,mx);

yawa=yawh/20;

yaw=map(yawa,0,1000,0,255);

yawx=map(yaw,13,23,mn,mx);

**fmotor=throttlex+0.2\*(pitchx-md)+0.1\*(yawx-md); //**received value after getting appropriately converted is processed through these equations

**bmotor=throttlex-0.2\*(pitchx-md)+0.1\*(yawx-md);//for pitch and roll each of their vales are compared to their mid value and the difference between its current value and mid**

**rmotor=throttlex-0.2\*(rollx-mdr)-0.1\*(yawx-md);// value is added and subtracted to opposite motors for which pitch and roll are defined respectively .Throttle is given equally**

**lmotor=throttlex+0.2\*(rollx-mdr)-0.1\*(yawx-md);// to all. Yaw values are subtracted with their predefined mid values and then added and subtracted to adjacent motors after \_ getting multiplied by a factor to suitably control its effect**

m1.write(fmotor);

m2.write(bmotor);

m4.write(lmotor); //sending final values to motor through ESC’s

m3.write(rmotor);

}

**Problems:**

* 1 out of 10 times (approx.) one motor stops working when given maximum throttle.
* Unable to read data from sensors regarding orientation and acceleration of copter due to lack of knowledge on how to use it and therefore not able to implement PID loop

**Tried Approach till now –**

* Restricted the value of maximum value of output to 165 even though it was working on 168