Summary about project

X-bot

The ultimate quadcopter robot

Introduction

This is an autonomous computer controlled robot. This robot can do variety of tasks. It is user-friendly & it is quite wise for it’s safety. This robot is fully programed and it

consist a programmable microcontroller called Arduino Mega 2560 which is the main brain of this robot.

About this robot

This robot is made up of microcontrollers, sensors, servo motors, brushless motors, propellers, electronic speed controllers (ESCs), Li-Po(Lithium-Polymer) battery and many more stuffs. This robot is fully independent. It uses a gyro sensor for its balance & ultrasonic distance sensor for its autonomy. It is a versatile and fully programmed robot.

Applications of this robot

- Versatile and flexible for doing any task.
- Autonomy for advance safety.
- Taking pictures from height safely.
- Pointing the objects as we need.
- Carrying the objects from one place to another.
- Experimenting the ideas in three dimensional world.
- No limitation of controlling.
- Smooth and silent flight.
- Gaming in real world.

Concept and idea

From the small age only I was really interested in science and technology. I was really curious about the thing that happens in our reality. When I grew up I found that all the question in my mind was solved by science. I was really interested about robotics and electronics. I love the robots which floats in three dimensional space. When I was 9 I knew that how does a robot floats in three dimensional space(air or water). By getting the concept I wanted to create a helicopter with a simple toy car DC motors. As my locality is

not so develop and my family background is poor I used to go to junkyards for searching some DC motors. I tried to create helicopters about 50 times but it failed. The reason was due to lack of gyro, good propellers & motors & a flight controller board. We humans are autonomous even the flies & other arboreal animals are have sense and could fly autonomously then why not the robots. I thought to create such a robot which could be autonomous and could do any programmed tasks. So I used some cheap sensors and quadcopter kits for making an autonomous computer controlled robot.

Obstacles faced

- **Hardware**

As you that I am from an underdeveloped country and a poor family background so It is nearly impossible to summon these items together. So I went to India for buying the materials required for building the robot. My father gave me two choice either buying a simple laptop or the project items. I was demanding a laptop before 6 months but at the time of getting it I sacrificed my wish and I buyed the project item. The cost of the equipment was so expensive for us. So I went to a Gift House and I started a job of repairing RC toy helicopter. I got many ideas while repairing those helicopters and I practised for controlling the helicopters. After getting the stuffs I was really new for creating a robot. In one hand I was excited and in another hand I was little bit scared of failure. But dad encouraged me for everything. I attached and detached the stuffs many times for increasing efficiency because I didn't have experience about quadcopter.

- **Software**

I was really new for the arduino or C++ language because at my school we were learning QBASIC. I was little bit hopeless about this matter but when I read the reference books of C++, Arduino and Java I found that the language was not so sophisticated as I thought. I learned the programing languages in about 15 days but I was not that expert in C++ and arduino languages. It was really interesting to program the microcontroller because I got the output in hardware form and it was like a magic. It was very difficult to learn PID controller because derivative and integration were not in our course. It was like a

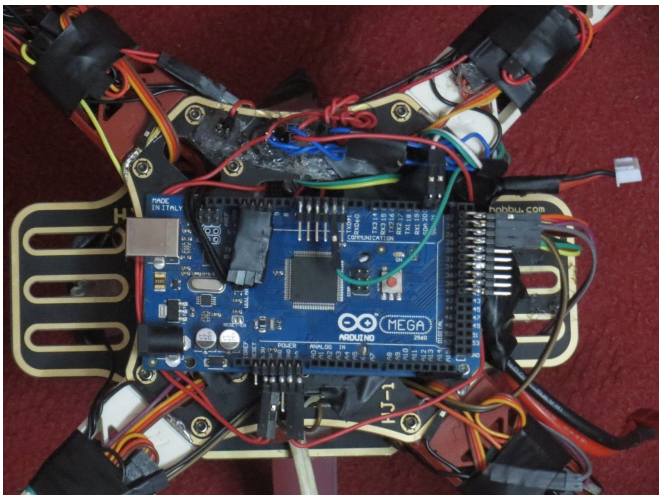
nightmare for learning those things without a guide or a teacher. In spite of all these obstacles I tried to use all my knowledges of math, computer and science for bring my dream project true and I finally did it.

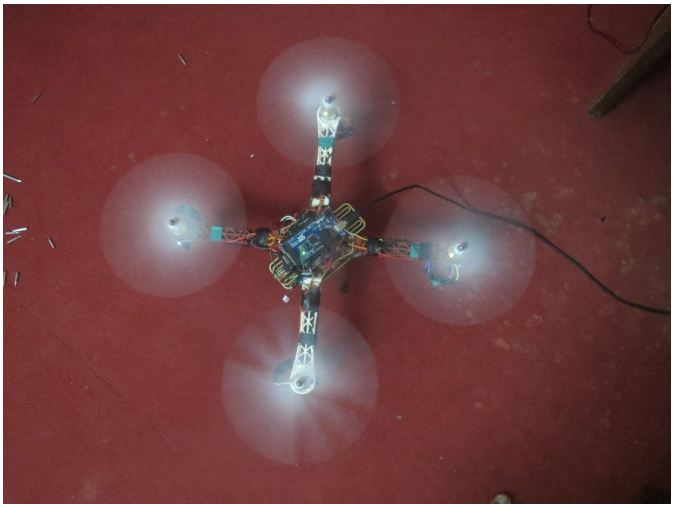
Parts used

- **Arduino Mega 2560 r3**
- **Arduino nano v3**
- **ESP8266 wifi module**
- **GY-521 gyro module(MPU6050)**
- **2x 9g torque Servo motors**
- **4x 1500kv brushless motors**
- **2x CW(Clockwise) propeller**
- **2x CCW(Counter Clockwise) propeller**
- **4x 40A Simonk firmware ESC**
- **Quadcopter frame**
- **Aluminium Sticks**
- **2s Li-Po battery***
- **HC-SR04 ultrasonic distance measure module**

*** Note: I have bought 3s li-po battery pack but my middle cell was ruined by charger so I threw the middle one and I made it 2s**

Photos:


MADE IN ITALY
MEGA
ARDUINO




MIRAGE

I am uploading only some photographs because my internet speed is too slow that It will take 2 days to upload a video. Please consider my problem. If it will be possible I'll upload a video soon in my Youtube account.

Link: https://www.youtube.com/watch?v=zmMyd0-AnLI