

Project Objective: RPi_Quadx3

BY ROBERT SOLOMON

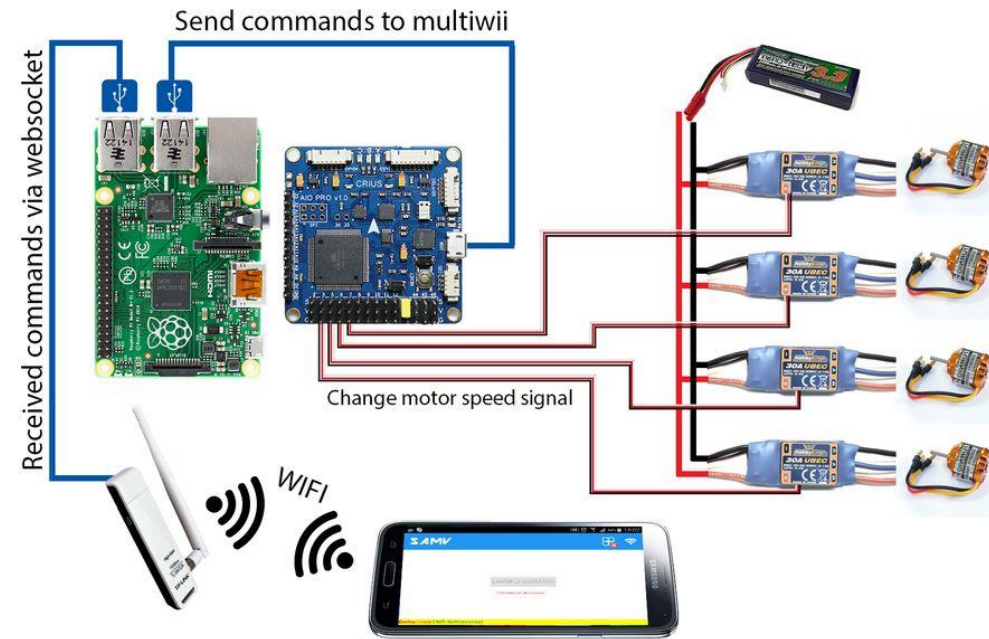
GITHUB: [HTTPS://GITHUB.COM/EAZYROB97](https://github.com/EazyRob97)

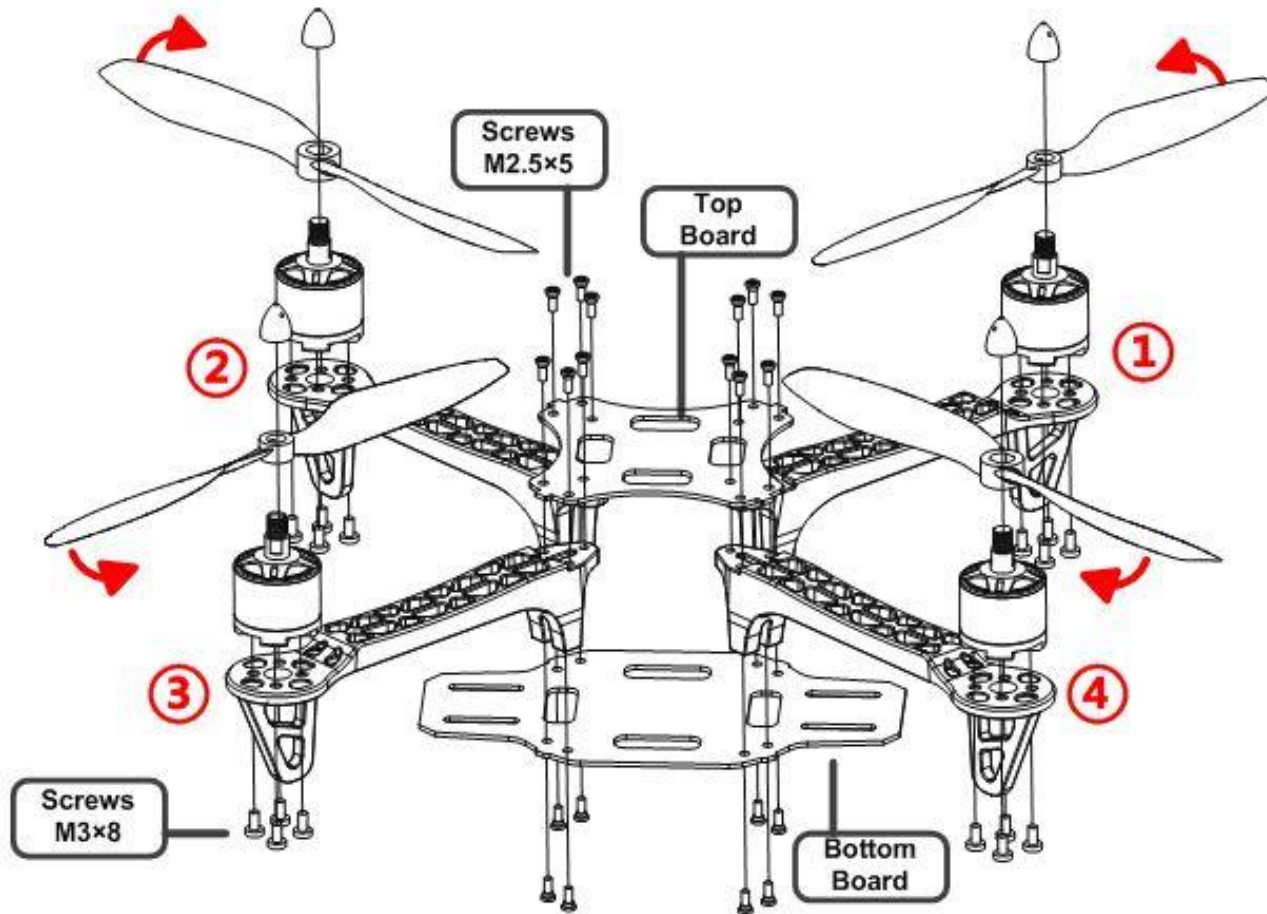




Design/Technology Used!

- ▶ Smartphone
- ▶ Flight Controller
- ▶ Raspberry Pi3
- ▶ Brushless Motors
- ▶ ESCs
- ▶ Lipo Battery
- ▶ MultiWii Application
- ▶ Quadcopter Frame





My DIY Quadcopter Construction Plan

MultiWii - config.h | Arduino 1.8.5

File Edit Sketch Tools Help

MultiWii Alarms.cpp Alarms.h EEPROM.cpp EEPROM.h GPS.cpp GPS.h IMU.cpp IMU.h LCD.cpp LCD.h MultiWii.cpp MultiWii.h Output.cpp Output.h Protocol.cpp Protocol.h RX.cpp RX.h Sensors.cpp

```

/***** The type of multicopter *****/
// #define GIMBAL
// #define BI
// #define TRI
// #define QUADP
#define QUADX
// #define Y4
// #define Y6
// #define HEX6
// #define HEX6X
// #define HEX6H // New Model
// #define OCTOX8
// #define OCTOFLATP
// #define OCTOFLATX
// #define FLYING_WING
// #define VTAIL4
// #define AIRPLANE
// #define SINGLECOPTER
// #define DUALCOPTER
// #define HELI_120_CCPM
// #define HELI_90_DEG

/***** Motor minthrottle *****/
/* Set the minimum throttle command sent to the ESC (Electronic Speed Controller)
   This is the minimum value that allow motors to run at a idle speed */
// #define MINTHROTTLE 1300 // for Turnigy Plush ESCs 10A
// #define MINTHROTTLE 1120 // for Super Simple ESCs 10A
// #define MINTHROTTLE 1064 // special ESC (simonk)
#define MINTHROTTLE 1050 // for brushed ESCs like ladybird
// #define MINTHROTTLE 1150 // (*) (**)

```

1

Arduino Pro or Pro Mini, ATmega328P (5V, 16 MHz) on COM3

10:45 PM

Configuring The MultiWii Board

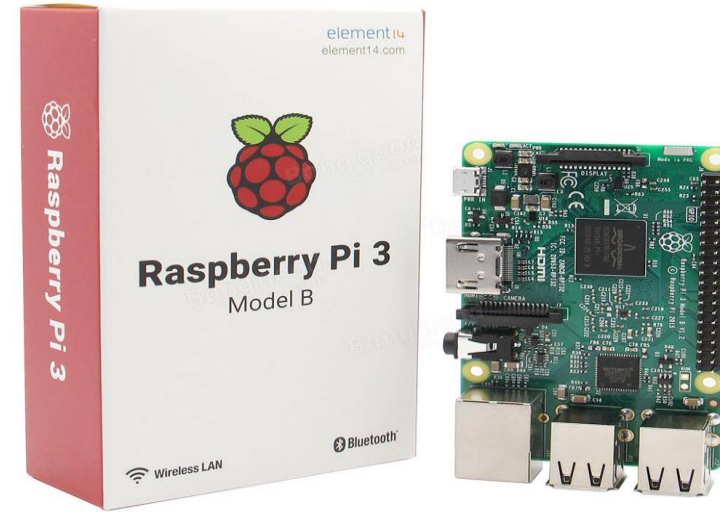
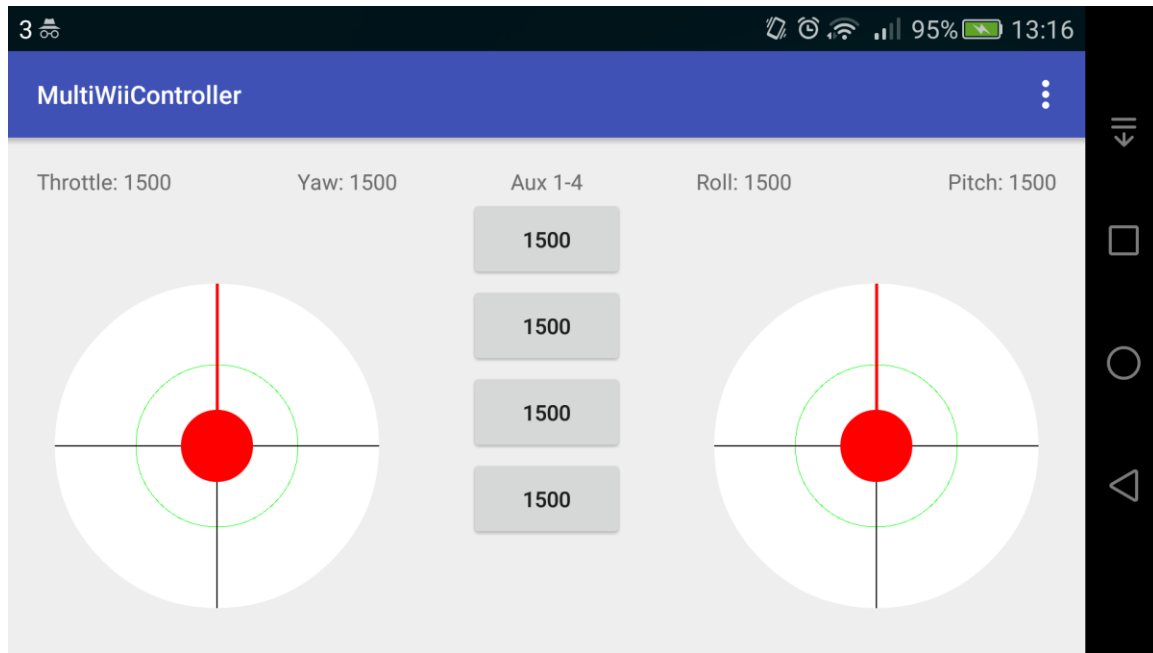
MultiWii GUI Adjustments

- ▶ Graphical Data representing the behavior of the Drone
- ▶ Flight Modes for the Auxilery Channels set to Horizon
- ▶ Java Based Program
- ▶ Drone Based Model displayed on Screen





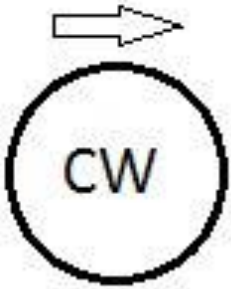
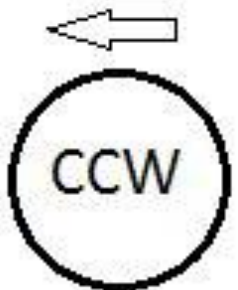
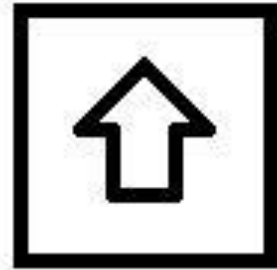
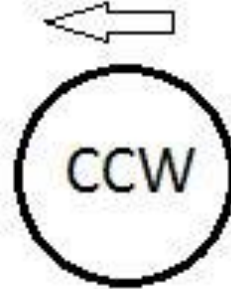
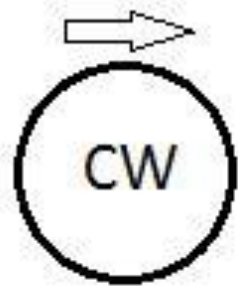
MultiWii Testing Phase!



Remote Application & Raspberry Pi 3

Demonstration of the Smartphone, Pi & MultiWii Communicating





How Does a
Quadcopter
Fly?

Challenges Encountered



- ▶ **Setting up Wifi Key & installing the driver for Raspberry Pi**

Solution → Changing the in-built Wi-Fi on Raspberry Pi 3 to act as AP

- ▶ **Configuring the Network Interfaces for the Raspberry Pi to allow for access**
- ▶ **Delays in Deliveries (playing a huge role in Time)**

Solution → Focused on working on what I had while waiting for deliveries.

- ▶ **Compiling the server to run on Start-Up**

Things I Learned!



- ▶ Expanded my Knowledge in RC Aircraft Design
- ▶ Deeper Understanding Raspberry Pi's Network's Interface and the Pi itself.
- ▶ Patience
- ▶ Critical Thinking
- ▶ Source Control

Summary (Future Improvements)

1

Change the Communication System, why? (for more reliable & efficient use)

2

Add a Camera Module to the Quadcopter System

3

Research into adding Sensors (for accurate calculations)

4

Change the Look of Smartphone Transmitter.



Thank You!
