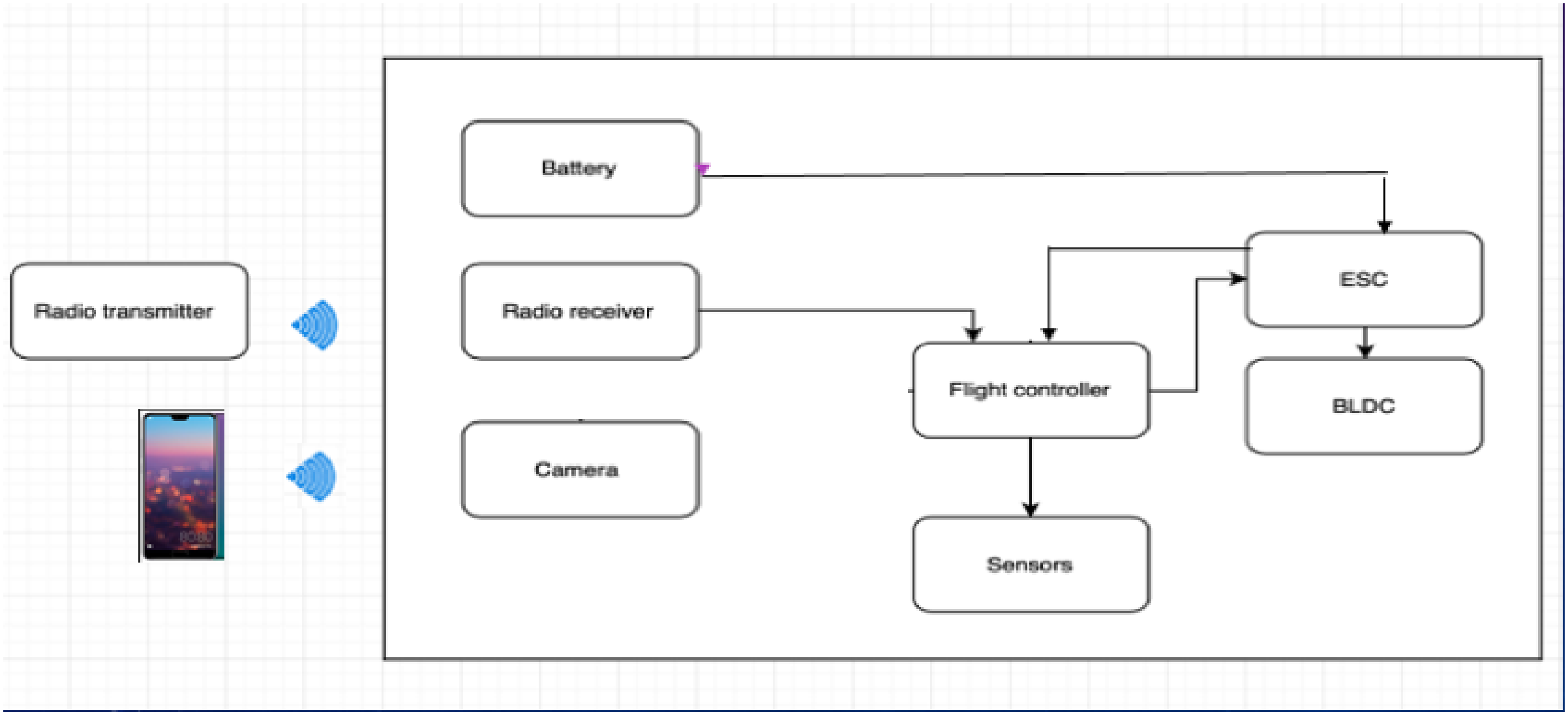
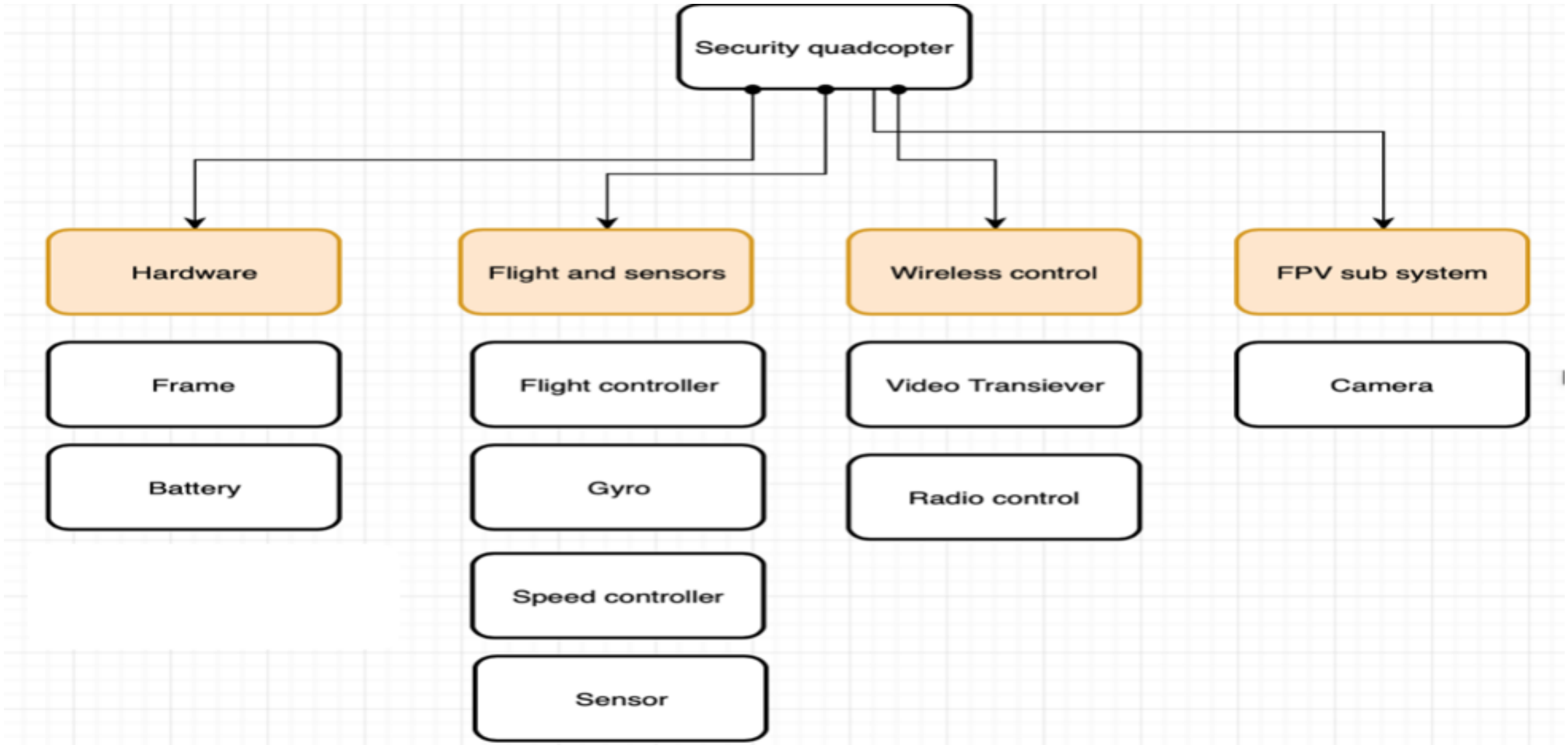
Fasial Albluwi 201300137

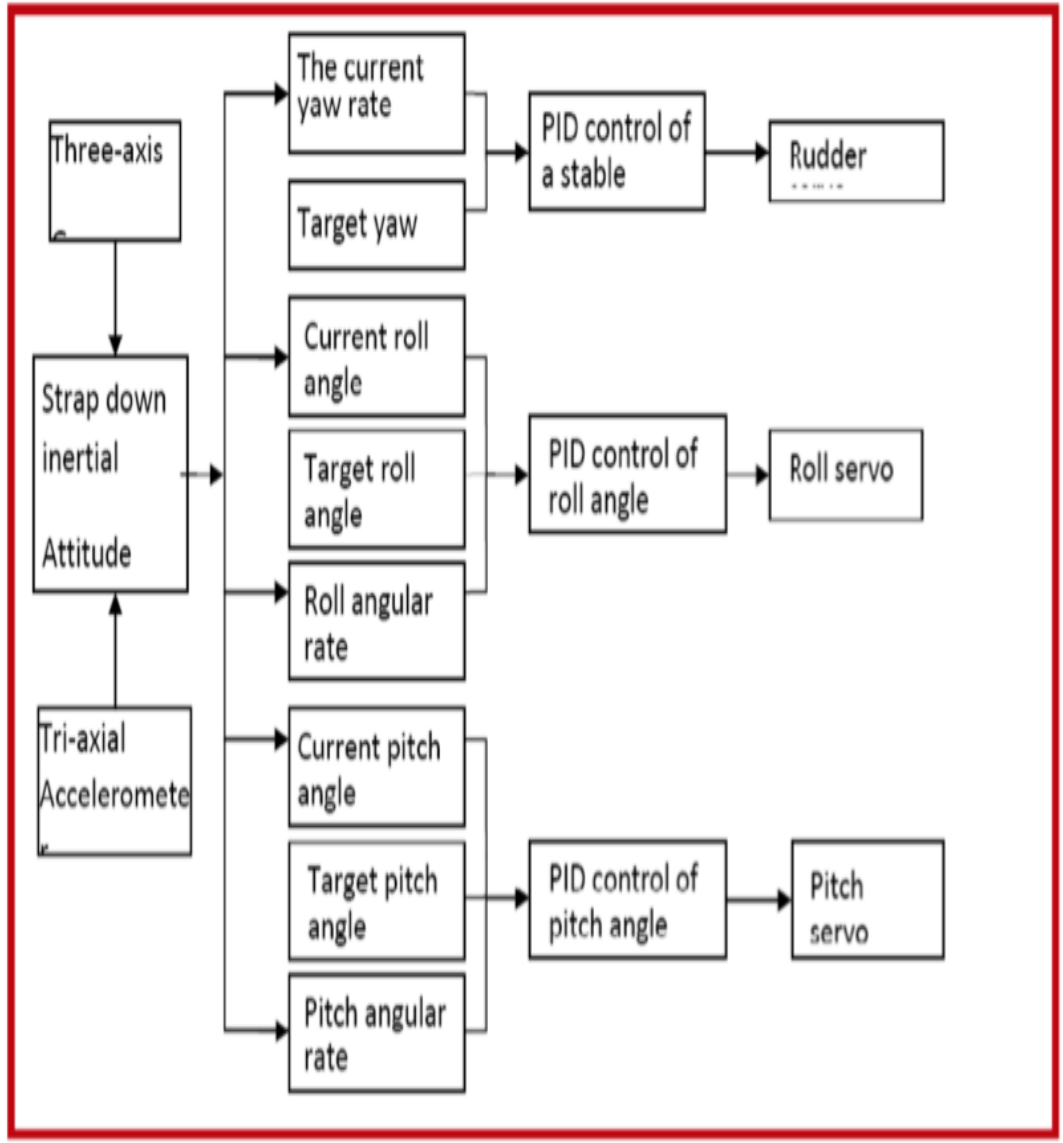
Hussain Al-Yami 201300448

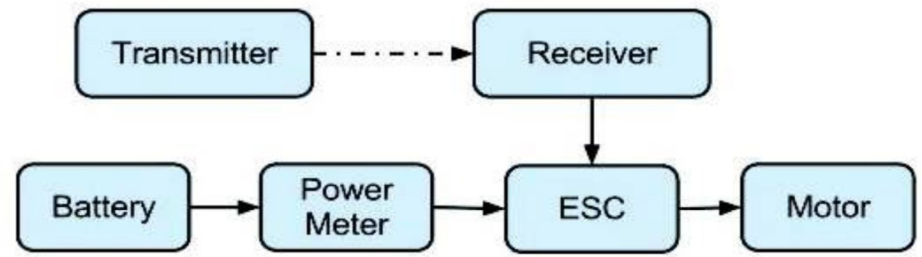

SECURITY
QUADCOPTER


Radio transmitter
Battery
Radio receiver
Camera
Flight controller
ESC
BLDC
Sensors

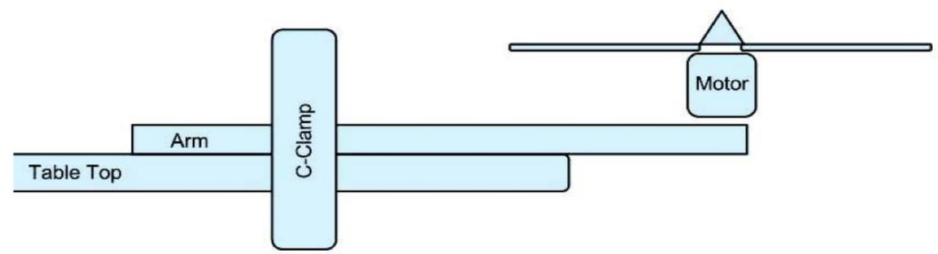

Security quadcopter
Hardware
Flight and sensors
Wireless control
FPV sub system
Frame
Battery
Flight controller
Gyro
Speed controller
Sensor
Video Transiever
Radio control
Camera

Size	Range	Aerial Platform	Abilities
Very small (50cm in length)	Very close (5km)	Multi Rotor	Quadcopters
Small (2 meters in length)	Close (50km)	Fixed Wing	GPS Drones
Medium	Short (150km)	Single Rotor	Delivery Drones
large	Mid-Range (650km)		Photography Drones


Three-axis
Strap down inertial
Attitude
Tri-axial Accelerometer
The current yaw rate
Target yaw
PID control of a stable
Rudder
Current roll angle
Target roll angle
Roll angular rate
PID control of roll angle
Roll servo
Current pitch angle
Target pitch angle
Pitch angular rate
PID control of pitch angle
Pitch servo


Transmitter
Receiver
Battery
Power Meter
ESC
Motor

(a)


Motor
Arm
C-Clamp
Table Top

(b)

Projects	Case 1	Case2	Our Project
Autonomous		√	
Accelerometer	√	√	√
Camera attached	√		√
Custom frame	√	√	√
Custom design	√	√	√
Flight controller	Naze32	Pixhawk PX4	KK2.1
Complexity	Difficult	Difficult	Easiest

- The project feasibility was verified by conducing the following
  - Finalizing idea and design of the project
  - Offering components according to design requirements
  - Acquiring materials
- All the materials are not available locally and need to be ordered.
- The testing can be performed in PMU sport center and does not require any specific special tools

Task	Faisal	Hussain	Youssef	Fahad	Task Total
Search & acquire components	30%	20%	35%	15%	100%
Design Subsystems	25%	30%	20%	25%	100%
Test Subsystems	20%	25%	25%	30%	100%
Write Reports & Presentations	25%	25%	20%	30%	100%

No.	Description	Quantity	Unit cost (sr)	Total cost (sr)
1	Motor speed controllers (ESCs)	12	50	600
2	Flight controller	1	300	300
3	Frame	1	170	170
4	Battery	1	300	300
5	Propellers	25	5	125
6	Camera	1	200	200
7	Connectors			70
8	Motors	10	80	800
9	FPV receiver	1	500	500
10	Transmitter and receiver	1	300	300
			Total	2795

Strong, light weight

LCD for feedback, Affordable

BLDC

Basic

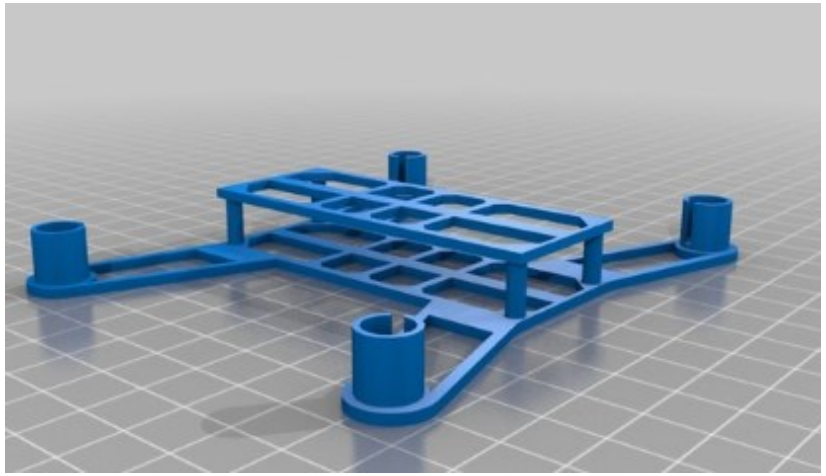
which provides

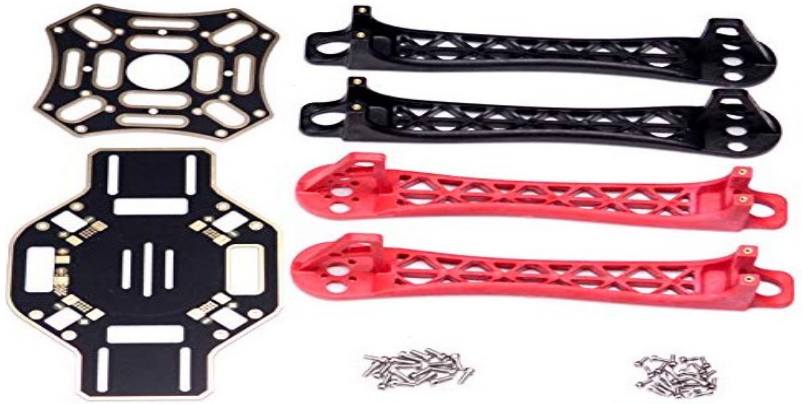
better resistance to damage on hard landings

easy to configure, built in sensors

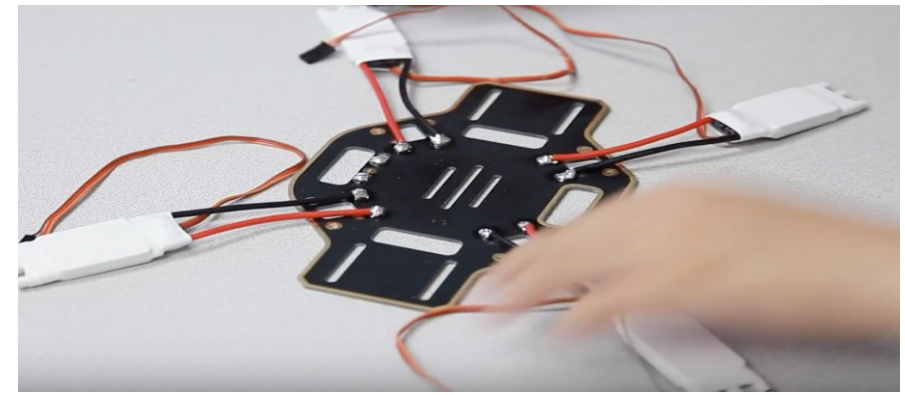
Type	DC	BLDC
Weight	75g	50g
Rpm	13KV	1000KV
Cost	80	80

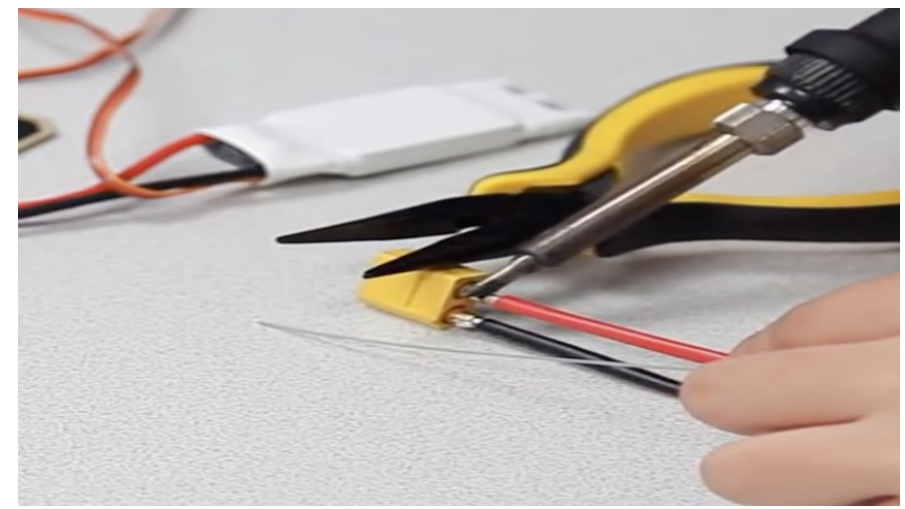
Type	Hitec RCD	IFS-TM10 RC
Weight	900g	392g
Channel	4	6
Control Range	800m	1.2km

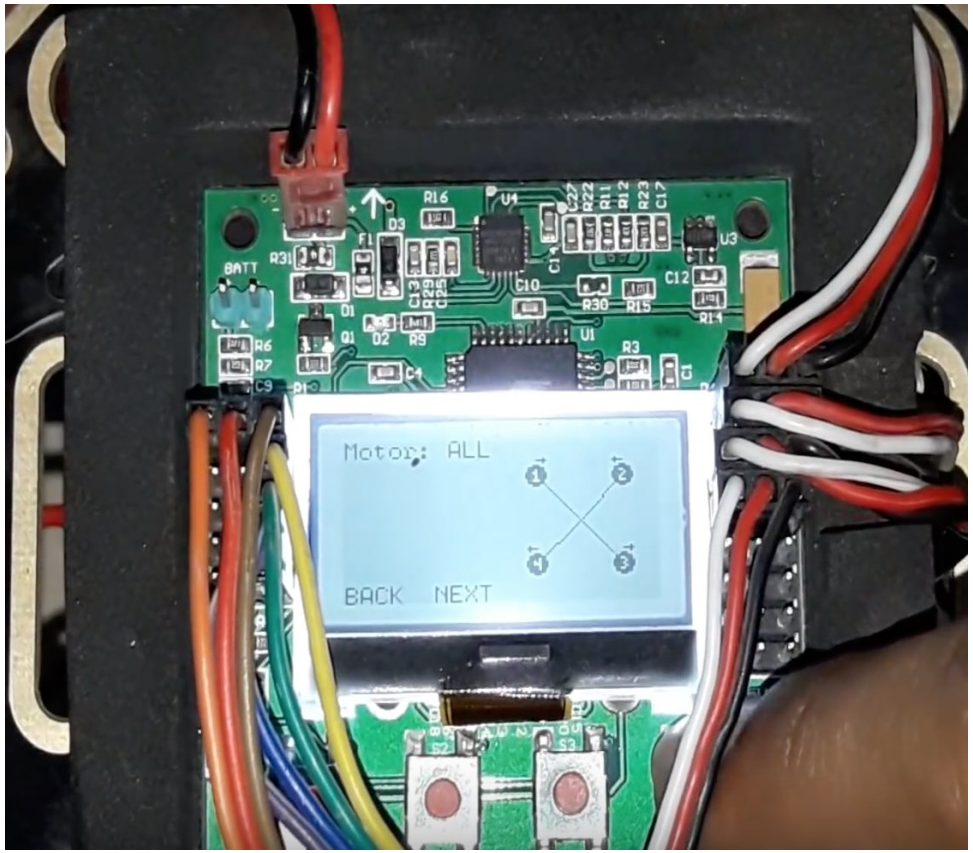


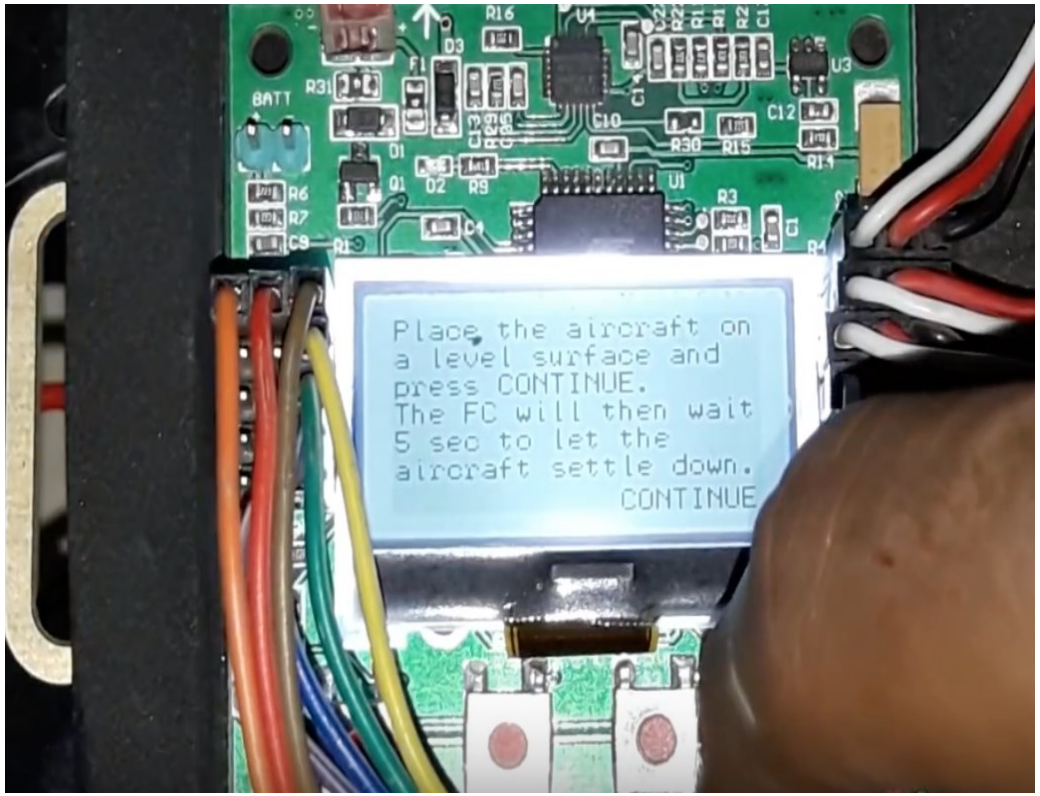


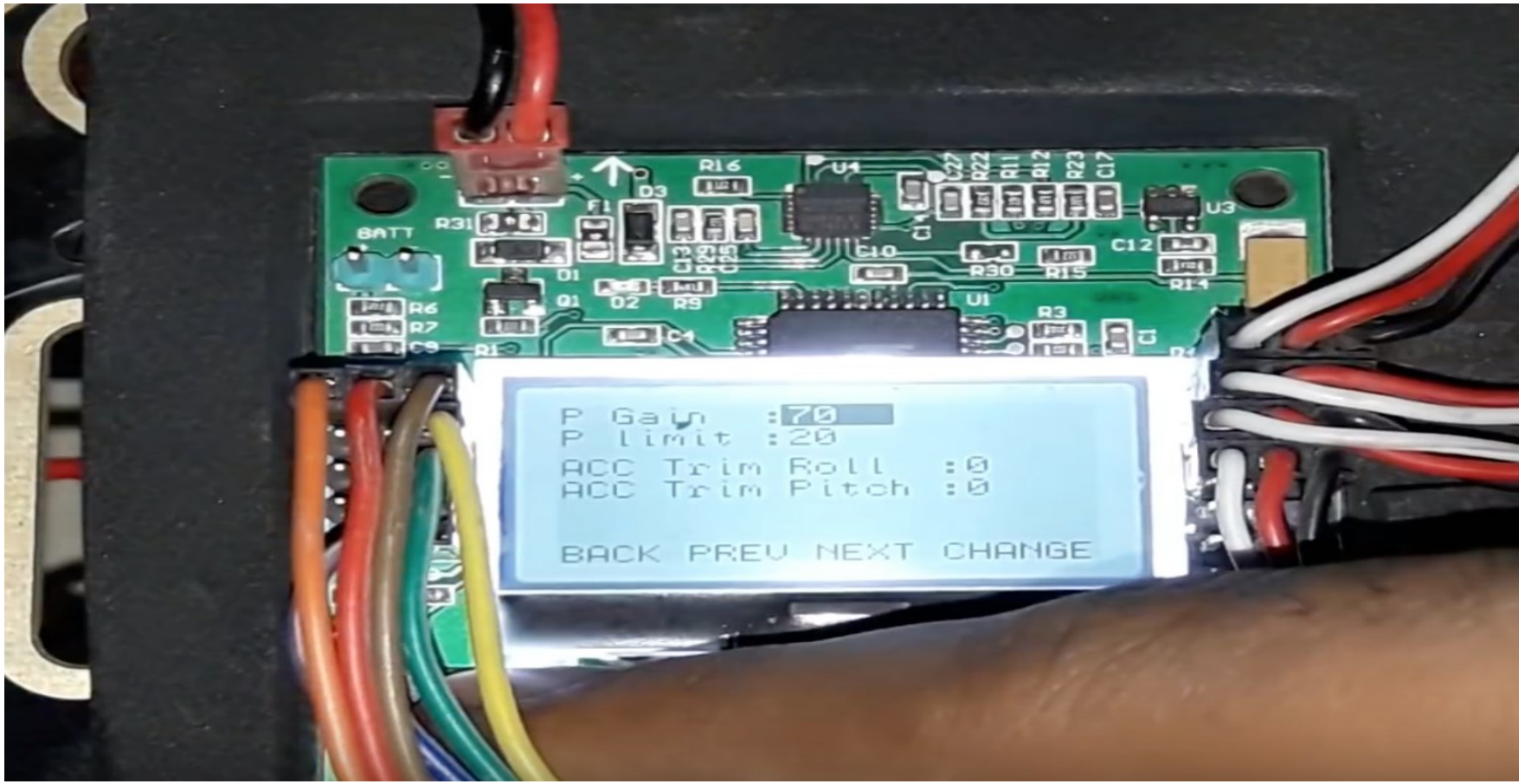
Type	3D printer	YoungRC F450
Weight	900g	500g
Metal	PLA (Polylactic Acid)	Plastic and Fiber Glass
Cost	700	200





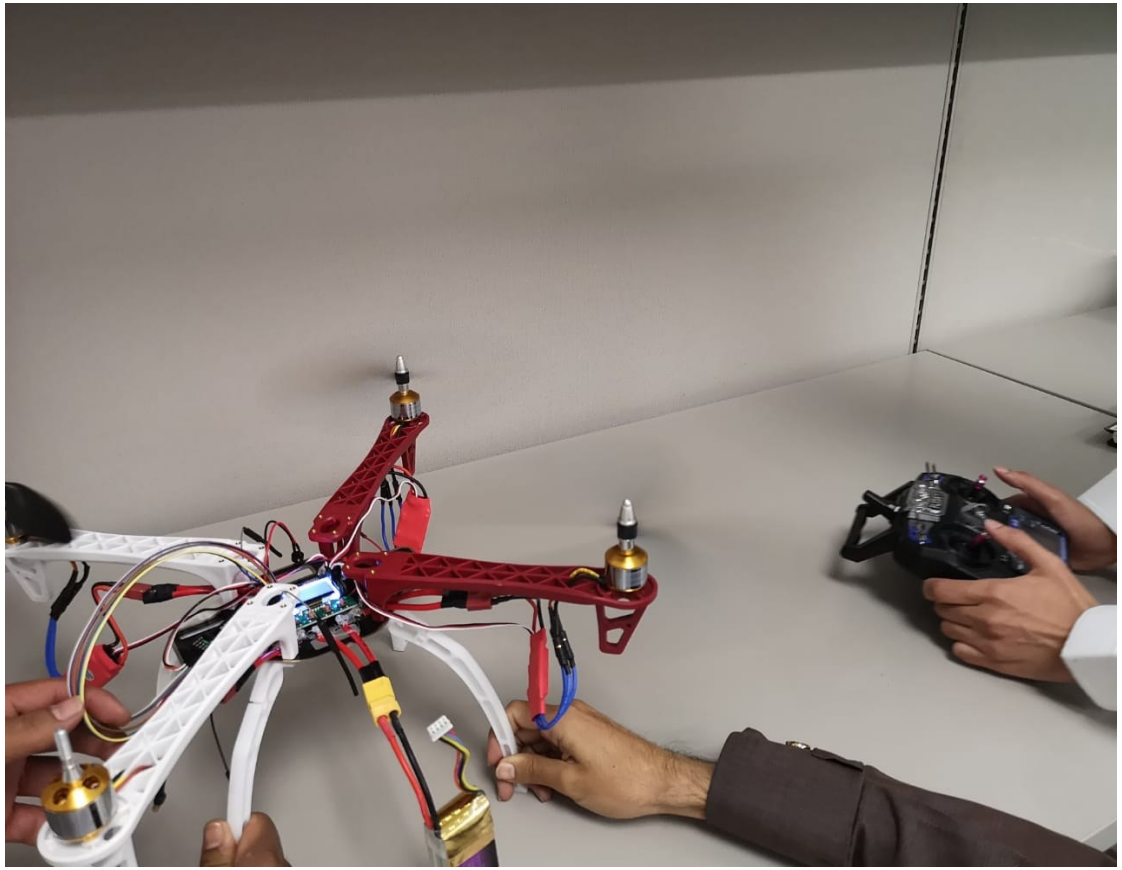

Motor: ALL
1
2
4
3
BACK NEXT


Place the aircraft on
a level surface and
press CONTINUE.
The FC will then wait
5 sec to let the
aircraft settle down.
CONTINUE


P Gain :70
P limit :20
ACC Trim Roll :0
ACC Trim Pitch :0
BACK PREV NEXT CHANGE
BATT
R16
U4
D3
F1
R31
D1
Q1
D2
R9
C4
R6
R7
C9
R1
U1
R3
C1
U3
C12
R14
R30
R15
C10


FLYSKY
FS-i6


UPDATE
A6B



Testing the direction of rotation for each motor

Checking connection of transmitter to receiver and flight controller


MEM
TEST
DT-2234C+
DIGITAL TACHOMETER
1144

- PROBLEMS

1. Quadcopter flying downward
2. ESCs heating up

- SOLUTIONS

1. Flip the propellers
2. Reduce the current flowing to the ESCs by reduce the gain.

- PROBLEMS

1. Unequal speed of motors
2. Unbalance due to the spanning

- SOLUTIONS

1. Measured the RPM by digital tachometer
2. Replaced the damage motors

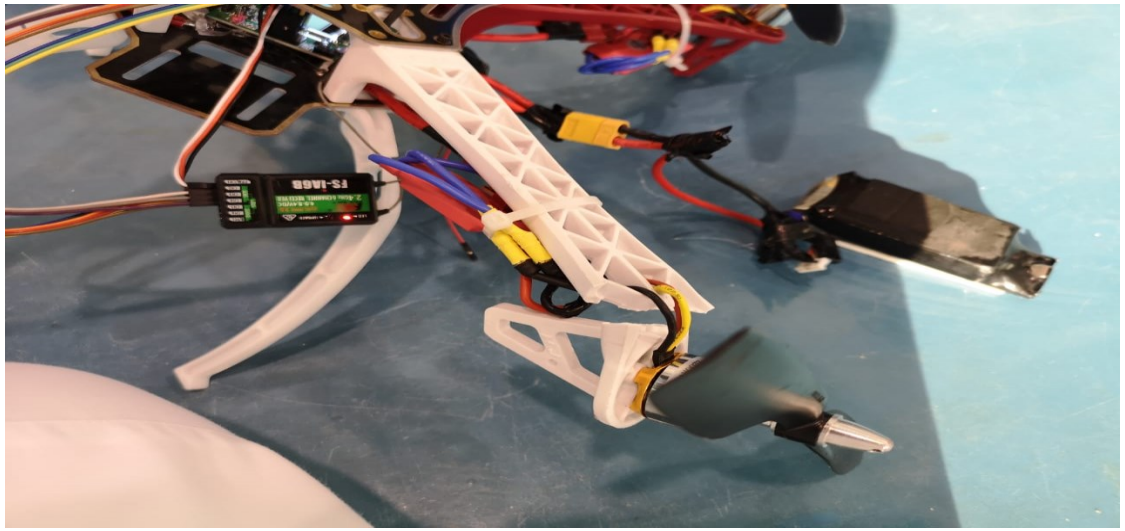
- PROBLEMS

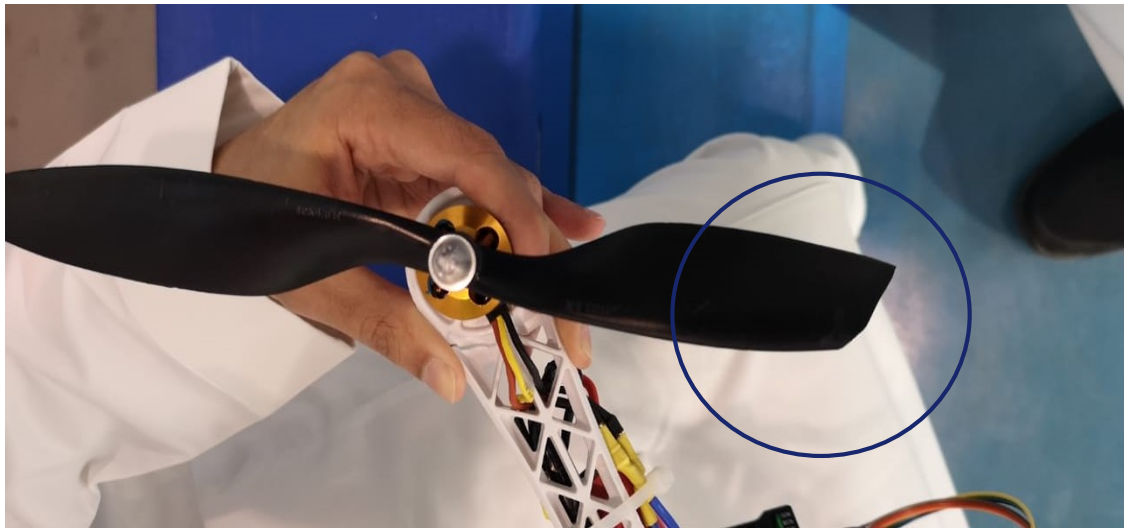
1. Difficult to control while flying

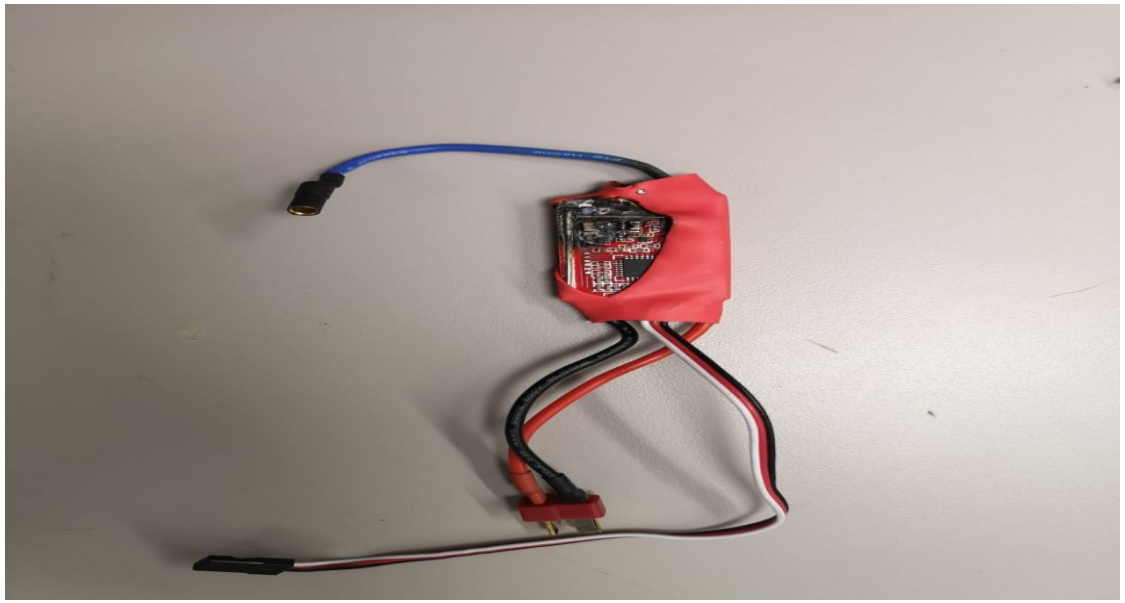
- SOLUTIONS

1. Need training course in order to fly perfectly

2019-04-15 18:02:18
Cam


FS-iA6B





http://rcarduino.blogspot.co.uk/2012/01/how-to-read-rc-receiver-with.html