Project Name – "Hawk" (An FPV Racing Drone)

Problem Statement- To make a quadcopter with live video transmission capabilities with minimal latency for competitive racing.

Project Budget- INR 75,000

Description-

A Senior & mentor one day put this idea in my head of building a drone and that too a racing drone with first person view through goggles. This endeavour began as all other projects do, research. The components of drones, rotation of props, motor Kvs , ESCs, power distribution , chassis materials etc. After every component was finalized, the parts were ordered.

After arrival I started piece by piece assembling the chassis then mounted the motors, connected the ESCs and zip tied them to the frame, mounted the flight controller, power distribution board, and connected everything with each other.

The drone didn't run properly as the flight controller, the ESCs etc, all need to be binding and calibrated before smooth operation can occur. I was mistaken. The drone was very wobbly. My senior explained that I need to dabble with the PID settings of the controller, after a few hits and trail attempts I understood what effects PID has on flight behaviour and finally smooth flight was obtained.

I proceeded to attach a 700 TVL camera with a PAL output coupled to a video encoder and transmitter operating at 5Ghz. This feed could be received via goggles attuned to the same frequency.

This robot participated and came second in the first ever Indian Drone Racing League.

Materials Consumed-

1. Carbon Fiber Chassis Set
2. 2200Kv Cobra BLDC motors
3. 30Amps Electronic Speed Controllers
4. Naze32 Rev6 Flight Controller
5. Power Distibution Board
6. 700 TVL Camera
7. 5Ghz 400mW transmitter
8. Antenna
9. Controller TransReciever
10. 2200maH Lipo Batt Pack