Progress Presentation-I

e-Yantra Summer Intership-2016

Autonomous – Drone

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Overview of Project

Autonomous-Drone

- Objective:
  Making an Autonomous Drone that can travel from one point to another based on its GPS Location. This drone can be used for tracking objects and aerial photography when interfaced with an Object Tracking Camera system.
- Deliverables:
  1. An Autonomous Drone
  2. Code and Documentation
  3. Tutorials explaining individual modules

Overview of Task

Task list

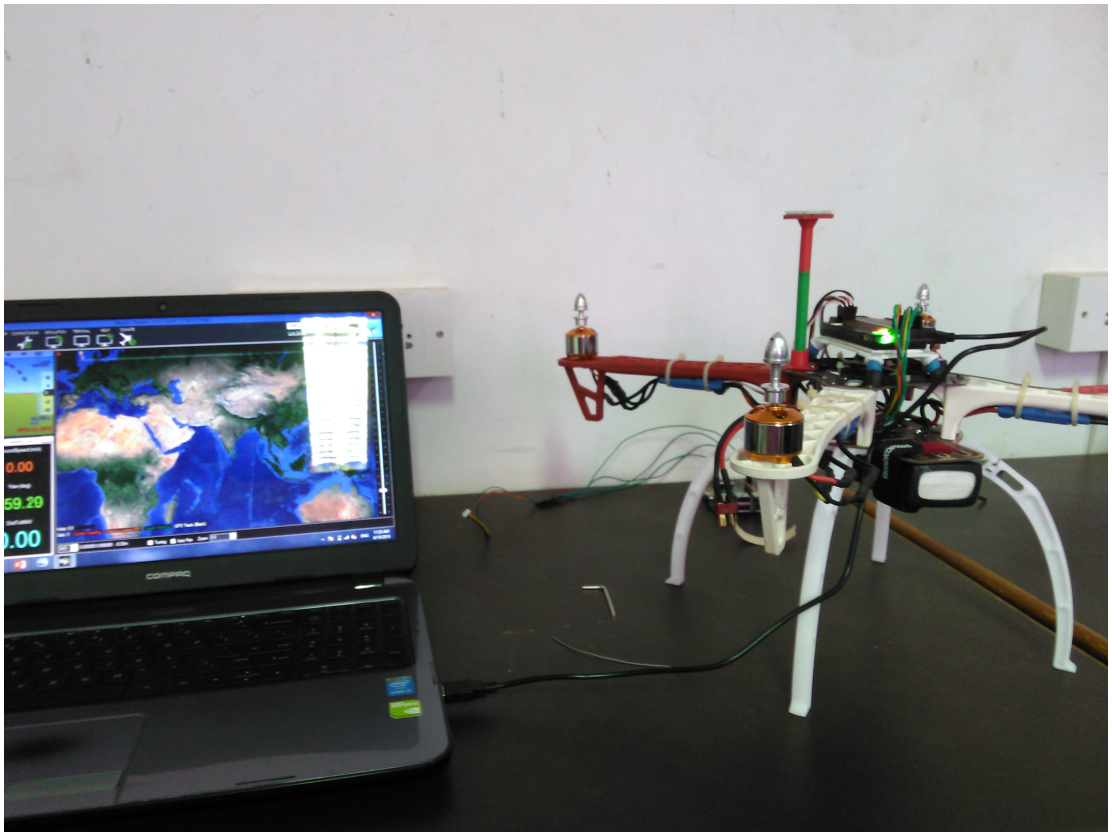
Task	Deadline
Calculations for making a Quadcopter	3/6/16
Calibrating APM	5/6/16
Assembling the quad for manual flight	7/6/16
Interface Gps with APM	9/6/16
Interface Raspberry-Pi with APM	11/6/16
Manual flight using R-pi	15/6/16
Auto take-off and land using R-pi	19/6/16
Create a flight planning algorithm	25/6/16
Autonomous Flight	3/7/16

Task Accomplished

- Research on drone project.
- Assembly of drone.
- Understanding software and Flight controller features.
- Interface GPS.
- TEST FLIGHT-1 done.
- Research on dronekit Library version.
- Installing Rasbarian linux on R pi.
- connect R-pi to Ardupilot via USART or USB
- Run python code on R pi to get data from Flight controller.

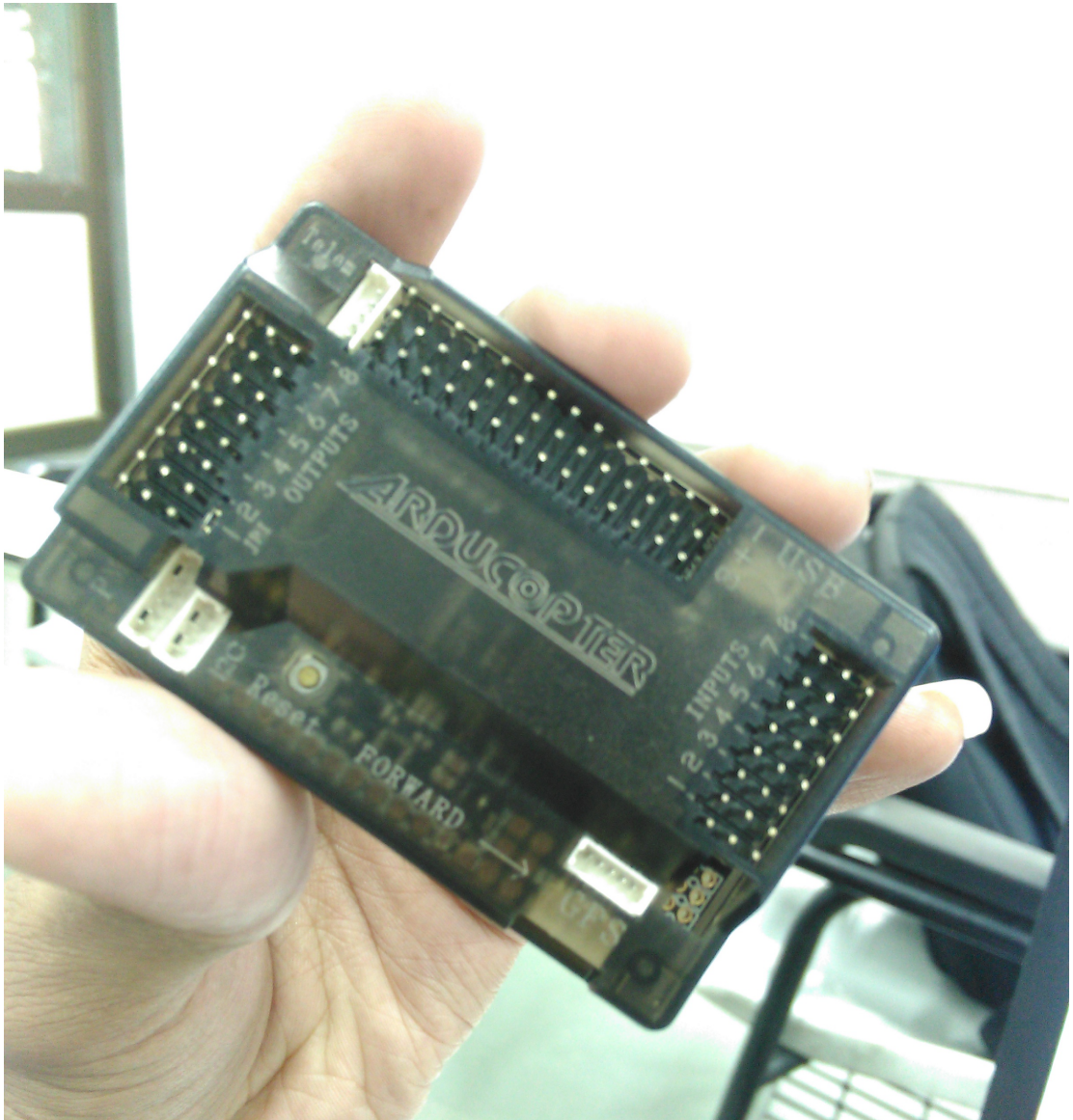
Images

Quadcopter with Mission planer software:



Images

Ardupilot Flight Controller:



Challenges Faced

Hardware challenges

- Calculation of total approx weight.
- For lifting the drone, calculate the thrust
- knowing the aerodynamics rules
- Choose the right propellers in size and pitch
- Calculate flight time
- BLDC motor power rating and KVA rating
- Choose right battery
- Carbon fiber frame for drone Interfacing sensors Like GPS,SONAR

Challenges Faced

Software challenges

- Ardupilot is open source Hardware.They release new version after fixing bugs! its very difficult to choose right firmware for your hardware among hundreds of software
- Finding out suitable version of MISSION PLANNER for your firmware
- More then 239 parameters are there. according to our mission we have to make changes
- Calibration axis of gyro and radio channels.

Future Plans

- Writing code in python
- Making drone autonomous
  By Autonomous, we mean that drone will fly and reach to our desire destination without Remote control.
- Mounting camera on drone , and making it object tracking drone

Thank You

THANK YOU !!!