**Flight Controller Considerations**

1. DOF
   1. 6 DOF – 3 axis accelerometer + 3 axis gyroscope
   2. 7 DOF – add air pressure sensor/barometer (altitude maintenance)
   3. 10 DOF – Add 3D axis compass sensor (Enables GPS + full autopilot)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Don’t need
2. IMU – Inertial Measurement Unit
3. MCU (Microcontroller) – (Processor) Only for Flight controller, not for SLAM (SLAM done on microcontroller)
4. Nr. of UART ports
5. Data Logging – Don’t need SD card, but microcontroller does
6. Voltage Sensor and Current Sensor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Not on Flight controller necessarily
7. PDB (Power Distribution Unit) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Not on Flight controller necessarily
8. Compatibility
   1. With Microcontroller
   2. With Electronic Speed Controller (ESC)

**Flight Controller Comparison:**

1. Pixracer R15

(<https://www.researchgate.net/publication/358795290_RMF-Owl_A_Collision-Tolerant_Flying_Robot_for_Autonomous_Subterranean_Exploration>)

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1. Pixhawk 4 mini/Pixhawk 4