SIXAXIS Quadcopter
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Introduction: Quad-motor vehicle controlled with PlayStation SIXAXIS controller

- Quadcopter: Rotorcraft propelled by four rotors
- SIXAXIS: PS3 controller with built-in single-axis gyroscope and three-axis accelerometer, analog and digital buttons. Communicates over Bluetooth or USB.
- Combined: Non-autonomous quadcopter controlled with Bluetooth radio

Problem Description: Making vehicles fly is hard!!

- Flight controls are very difficult to implement
- Over-compensated feedback from PID controller can lead to crashing
- PS3 controller solely designed for communicating with a PS3 console

Proposed Solution: Open source flight controls

Hardware:
- Pololu MiniIMU-9 v2
  - Inertial Measurement Unit
  - Provides aircraft data for maintaining stable flight
- Bosch BMP085
  - Barometric pressure sensor
  - Provides altitude readings
- ArduPilot Mega v1
  - Arduino microcontroller
  - Programmed to manage stabilization and navigation of aircraft

Software:
- Supplied Code:
  - ArduPilot flight controls
    http://code.google.com/p/arducopter/
- Our Code:
  - AP_InertialSensor_MinIMU9
  - AP_Compass
  - Altered configuration files to allow for operation with our sensors

Conclusion: Issues integrating our sensors

- Supplied ArduPilot flight controls are pre-configured to work with specific components
- Difficulty in integrating our code into existing program to operate with our devices