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Aerial vehicles without pilots, or Unmanned Aerial Vehicles (UAVs), have been gaining more and more attention. These vehicles are being used in various applications:

In light of many usages of a UAV, a four-rotor helicopter or so called Quadcopter was designed, built and evaluated in this project. Knowledge of mechanical structure, control systems, micro-controller programming, as well as software programming was all needed in the project.

The primary purpose of this FYP is to build a quadcopter which can:

1. Take off and land safely
2. Hover steadily
3. Follow user's commands
4. Shoot video footages
5. Shoot panoramic photos
Airframe

Simple and neat design
Anti-crash landing gear
Electronic circuit at the center
Mid-heavy camera carrying

Figure 1: Quadcopter final look

Control method

Legend:
Red — Higher speed
Blue — Lower speed
White — standard speed

Figure 2: Quadcopter working principle
(Reverse rotational directions of motors on the same axis)
IMPLEMENTATION

Figure 3: Implementation methodology

TESTING AND RESULT

Figure 4: Panoramic result