Overview
Unmanned Aerial Vehicle (UAV) is an autonomous aircraft or multicopter that could navigate through the air by remote controller or pre-determined programs. The UAV has been widely used in various areas such as photogaphy, military surveillance and firefighting. This project aims to develop a “Follow me” function that is fully based on visual tracking technique which allows the UAV to track a person or an object. In this project the Phantom 3 Advanced multicopter produced by DJI is used.

Methodology
The finalized algorithms used for object recognition include the color blob detection method and the particle filter based on color histogram. The tracking process is realized by the proportional-integral-derivative controller (PID controller).

Experiment Results
The overall result demonstrates that the UAV is able to track a single object with stability. Here bellow shows some of the tracking process:

Color Blob Detection:

Particle Filter:

The tracking accuracy is evaluated by how the target object is fixed relative to the center of the frame image. Both its location and size are concerned. The following figures show how the center of the tracking window appear on the frame in a given period, as well as how the its size change with respect to time. This shows that the UAV is able to keep a certain distance to the moving target while maintaining its orientation and altitude.