



Project Name: UAV for Aerial Mapping

Researcher(s)/Developer(s): Dr. Djitt Laowattana , Mr. Roongrote Wangkiet, and Mr. Peter Srivaree-Ratana

Introduction

Aerial imagery is one of the most valuable information for natural resource management. The series of still images can be mosaiced together to construct a high-resolution map which can be used for investigating an interested area.

Problem Statement

Traditionally, satellite images are used for map construction. However, it is susceptible to atmospheric conditions such as cloud and fog. The operation by manned aerial vehicles, despite providing clearer images, can lead to higher operational cost. Thus, the technology of unmanned aerial vehicles is introduced to bridge the gap between those two image-acquired methods.

Research/Development Approach

This project focuses on the development of various UAV subsystems to support field operation.

1. Airframe/Autopilot

Use an existing fixed-wing UAV system as development platform. The vehicle has 3 m of wingspan and 1 hr of endurance. Launch and recovery are performed with RC control mode by hand launch and belly landing consequently. Automatic waypoint navigation is possible via the autopilot.



Figure 1. Airframe used in the project (Tractor)

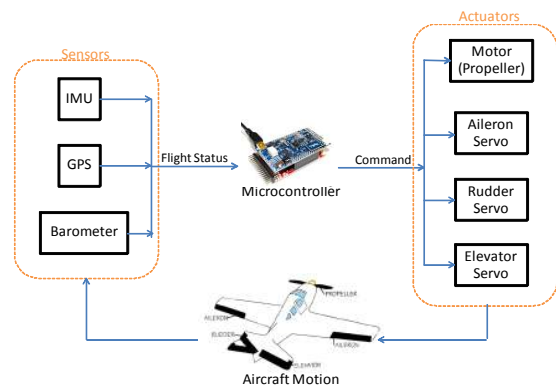


Figure 2. Working principle of autopilot

2. Payload Subsystem

Both still image and video cameras can be separately equipped. They are installed on a stabilizer to provide down-looking images in spite of subjecting to wind condition. Live-streaming VDO is possible for 3 km (LOS Condition) via current communication subsystem.

3. Recovery Subsystem

If there is no suitable area for landing, net retriever can be used to minimize risk of airframe crash.

Expectation

Mapping system for aerial data gathering.