Autonomous Flight With the Ar Drone©

Maarten Inja & Maarten de Waard
5872464 & 5894883

January 30, 2011

1 Introduction

1.1 The Ar Drone©

The Ar Drone© is an over WiFi remote controlled quadrocopter that has several onboard sensors:

- One vertical camera, pointing downwards
- One horizontal camera, pointing forward
- Ultrasound altimeter, to measure the altitude
- 3 axis accelerometer (measures propellor acceleration)
- 2 axis gyrometer
- 1 yaw precision gyrometer

Furthermore, it has an onboard computer system running Linux.

1.2 Our Goal

Summer-IMAV 2011 Indoor competition, some sub-tasks of the exploration challenge:

- Pick-up Object
- Exit Building
- Release Object

2 Controlling the Ar Drone©

The Ar Drone© has, like any other flying vehicle, the usual flying directions

2.1 ROS

2.2 SDK

Software Development Kid

2.3 Extending C with Python

It's awesome possum

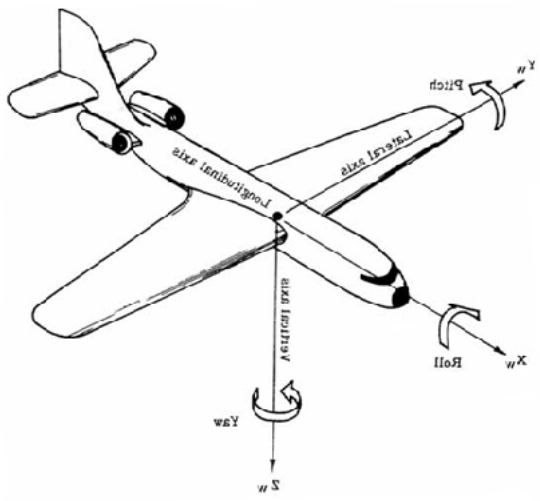

Figure 1: Movement Directions For Flying Vehicles

3 Methods Used

3.1 Finding The Object

3.2 Recognizing The Object

3.3 Picking Up The Object

4 Results

5 Future Work