Autonomous Flight With the Ar Drone©

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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©

2.1   SDK

Software Development Kid

2.2   Extending C with Python

It's awesome possum

3   Methods Used

3.1   Finding The Object

3.2   Recognizing The Object

3.3   Picking Up The Object

4   Results

5   Future Work