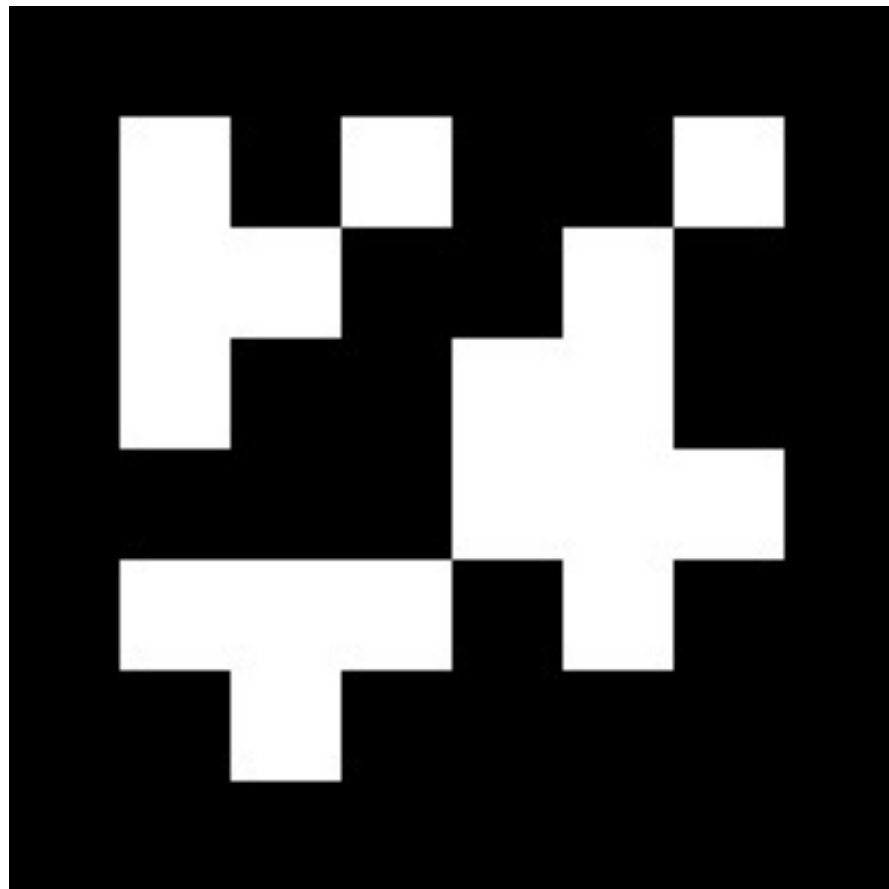


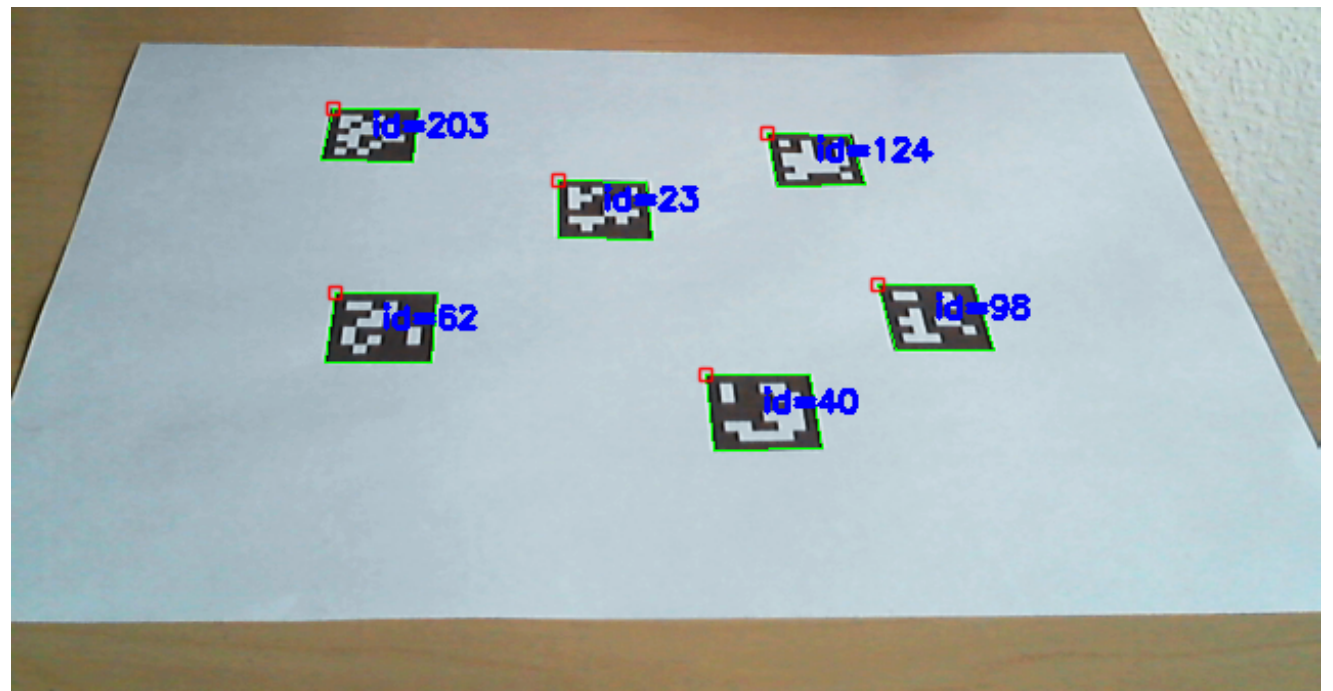
# Marker & CVDrone

2018/04/12

# 1. Marker Detection (50%)



**aruco marker**



**marker detection**

# **1. Marker Detection (50%)**

**a. calibration**

**b. marker detection**

**c. pose estimation**

**d. controlling**

# 1. Marker Detection (50%)

```
cv::Ptr<cv::aruco::Dictionary> dictionary =  
cv::aruco::getPredefinedDictionary(cv::aruco::DICT_6X6_250);
```

# 1. Marker Detection (50%)

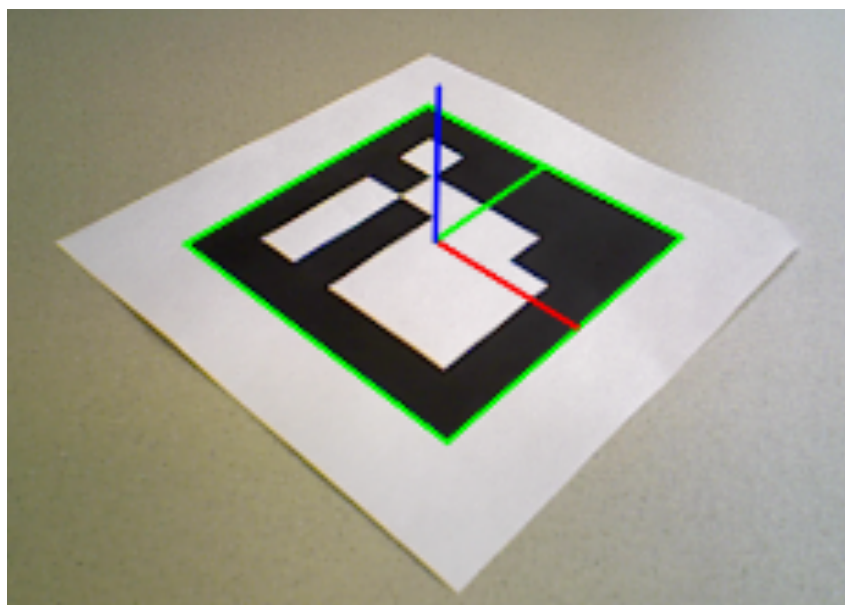
```
std::vector<int> ids;  
std::vector<std::vector<cv::Point2f>> corners;  
cv::aruco::detectMarkers(image, dictionary, corners, ids);
```

# 1. Marker Detection (50%)

```
std::vector<cv::Vec3d> rvecs, tvecs;  
cv::aruco::estimatePoseSingleMarkers(corners,  
markerLength, cameraMatrix, distCoeffs, rvecs, tvecs);
```

# 1. Marker Detection (50%)

- a. calibrate the drone camera
- b. marker detection by drone camera
- c. pose estimation



x: 10.3478  
y: 21.5618  
z: 3.9908

## **2. CVDrone (50%)**



# Download CVDrone project

- Link: <https://github.com/puku0x/cvdrone>

CV Drone (= OpenCV + AR.Drone) <https://github.com/puku0x/cvdrone/wiki>

[opencv](#) [ardrone](#) [c-plus-plus](#) [visual-studio](#)

58 commits

1 branch

0 releases

3 contributors

Branch: master

New pull request

Find file

Clone or download

puku0x Fix makefile

bin	OpenCV updated to 3.1 with opencv_contrib mod
build	Fix makefile
licenses	VS2015 and OpenCV 3.0 supported
samples	Small bug fix
src	Fix bugs on make

## Clone with HTTPS ?

Use Git or checkout with SVN using the web URL.

<https://github.com/puku0x/cvdrone.git>

Open in Desktop

Download ZIP

2 years ago

# Compile and Run

- for Windows VS:  
Click cvdrone/build/vs2015/test.sln to open project
- for Ubuntu & MacOS:  
\$ cd cvdrone/build/unix  
\$ make  
\$ ./test.a

Note:

1. You should install OpenCV and ffmpeg before “make”
2. You should connect to drone by WiFi before running “test.a”

# Install ffmpeg on Ubuntu and MacOS

- for Ubuntu  
sudo add-apt-repository ppa:mc3man/trusty-media  
sudo apt-get update  
sudo apt-get dist-upgrade  
sudo apt-get install ffmpeg
- for MacOS  
brew install ffmpeg

# Folder Overview

- **build/**

test.a (執行檔)

(for Unix, 修改程式碼後記得”make”再執行)

- **src/**

main.cpp

你也可以在這個資料夾中加入其他程式檔

- **samples/**

e.g. sample\_camera\_calibration.cpp

cvdroner 作者提供的一些參考程式檔，

將你想要測試的程式碼覆蓋到 main.cpp 中即可。

# Keyboard control

- **Note:**  
往後撰寫自動飛行的程式碼時，  
一定也要有 keyboard control 功能，  
且要有最高優先權，確保自動飛行狀況  
不佳時仍能手動控制。

```
"*****"
"*      CV Drone sample program      *"
"*      - How to play -                *"
"*****"
"*                                     *"
"* - Controls -                        *"
"*  'Space' -- Takeoff/Landing         *"
"*  'Up'    -- Move forward            *"
"*  'Down'  -- Move backward           *"
"*  'Left'  -- Turn left               *"
"*  'Right' -- Turn right              *"
"*  'Q'     -- Move upward             *"
"*  'A'     -- Move downward          *"
"*                                     *"
"* - Others -                          *"
"*  'C'     -- Change camera           *"
"*  'Esc'   -- Exit                   *"
"*                                     *"
"*****"
```

# ARDrone API

- takeoff();  
landing();  
onGround();
- Mat getImage();
- move3D(double vx, double vy, double vz, double vr);
- setCamera(int mode);