

# Group project: Where's Waldo?

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Introduction to Signal and Image Processing

**Hand in date: 28th of May 2017 at 23:59**

## Task

For this assignment, your task is to provide an image processing method and implementation to detect Waldo on a set of images. Aside from using your already acquired knowledge, this work will be an opportunity for you to explore new methods and get creative. This assignment must be done in groups of 2 or 3.

You are allowed to use any additional Python package, even those not explicitly introduced in the lab sessions. E.g. scikit-learn, scikit-image, opencv. Remember, we need to be able to run your code, so please use packages which are installable using pip. A common way to specify requirements is to use a requirements.txt file

## Data

Typically for challenges in computer vision data is split into two different sets; a train and test set. You will only receive the training set and we will evaluate your method on the test set, which neither you nor your method has ever seen before.

Download the dataset from ILIAS. In the archive, you will find in the **data** directory:

- The **images** directory containing the images.
- The **ground\_truths** directory containing binary images on which you will evaluate the performance of your detector. Each contain a bounding box indicating the location of your target.

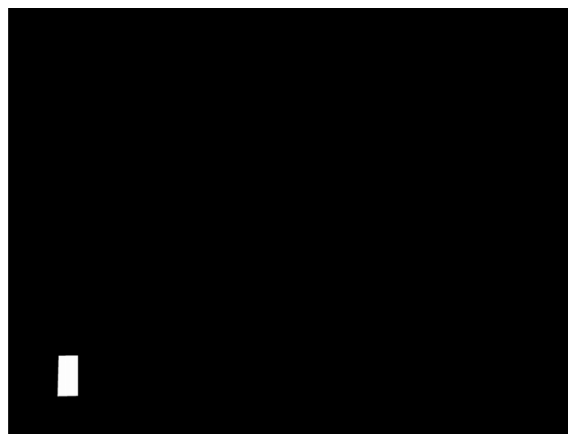
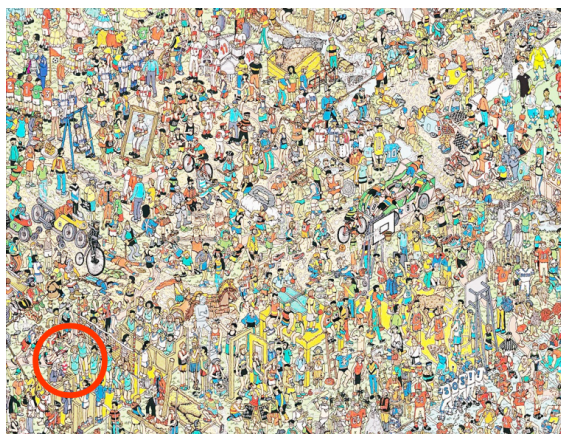


Figure 1: Example image with a bounding box annotation. Waldo is hiding in the bottom left corner.

## Evaluation

The performance of your detector will be taken as the accuracy:

$$\text{Accuracy} = \frac{\text{Number of correct detections}}{\text{Total number of images in the test set}} \quad (1)$$

Where a detection is correct if it is contained in the bounding box.

## Grading and hand in

You will be graded on a presentation that you will give in front of the class as well as on the provided code.

The grade will be composed as follows:

- 33 % Detection score
- 33 % Presentation of results
- 33 % Method (originality, idea etc.)

As a general advice, do not sacrifice the clarity, simplicity and creativity of your method/algorithm at the expense of detection accuracy.

Please create a python script `findwaldo.py` which contains a function `find_waldo(image)`. `find_waldo` takes an image as input and returns the  $x, y$  coordinates of Waldo ( $x = 0..width$ ,  $y = 0..height$ , where  $0,0$  is the bottom left corner of the image). We will evaluate the performance of your method by calling this function, so please make sure that the function runs as intended without needing to run the script from main.

Please hand in a .zip file, containing:

- A README or requirments file indicating the dependencies of your code (packages)
- The python .py source files (can be multiple files)