

Midterm Report - Lab B1

What did we try (Individual Contributions)?

1) Shradheya Thakre

- Template matching (Cross Correlation, Key points matching):

Creating templates of waldo, wenda and wizard from the given annotations and images

Sliding the template patches over the original images by using cv2.matchTemplate() method

Analysis: Did not give good results as it highly depended on template and required having a different threshold for each image. Also its very slow as it needs to match each possible template.

- Training Object Detector (dlib, <http://dlib.net/python/index.html>):

Used a blackbox trainer for simple object detector.

Analysis: Wasn't able to train images very well as the black box algorithm is only good for simple object like yellow cube, box etc and not for images.

2) Archana Pradeep

- Machine Learning:

Somewhat similar to what we did in lab 4, another method is to extract features from the images and then run a machine learning algorithm on it, in this case we tried using SVM from sci-kit learn.

However it didn't work very well, because we tried to convert the coordinates and the images into csv inputs for the svm to take in and didn't really extract any features. This could be an area we explore further in the future for the final project algorithm.

The preprocessing was very tedious (converting to csv) which I did somewhat manually, so maybe writing a script next time would help.

3) Wu Di

- Interest point matching:

The idea is to use SIFT detector and descriptor to find key pointers and making the scale and orientation invariant property to identify all possible characters. We cropped a waldo image as a base image. CV2 SIFT detectAndCompute() method is used to detect the key points and corresponding descriptors of base image and source images. After obtaining the descriptors, we match the descriptors by using CV brute force matcher. Ideally, the matched cluster points identify the Waldo. Analysis: a lot of False Positive results as features have similar key points were falsely identified as Waldo. And it seems difficult to distinguish all identified regions.