Infilect Deep Learning Challenge

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Infilect Deep Learning Challenge

Problem Statement

Given a set of images captured in grocery stores(shelf image), and a set of close up images of products in those stores, your task is as follows.

1. For every product image, find the location of that product in all shelf images in which it appears. 2. For every shelf image, locate all products and assign the name from given set of product images.

Additionally, you should also submit all the code files and a small description of your approach in a mail in order to validate your submission.

Note that these 2 problems are almost similar and solving one of them will help you solving the other one.

Dataset Description

That dataset is divided into 2 parts. Shelf images and product images.

Shelf images



product visibility. Note that these images may contain various types of products with multiple copies of same products. There are 3153 such shelf images. Each shelf image is named as db1.jpg, db2.jpg, db3.jpg ... db3153.jpg

These images are clicked in stores standing in front of shelves and with proper lighting conditions and

Product images



angle of the product. There are total 300 such product images containing 100 unique products. Each product image is named as qr1.jpg, qr2.jpg, qr3.jpg ... qr300.jpg

These images are clicked by placing each product on the floor and taking a close up shot such that it clearly

captures the entire product. You will find 3 images for each product each of which captures a different

Download

1. Use this link download it from internet (1GB). 2. Ask for a local copy if download is taking too long.

You can get the dataset from one of the following sources.

• Find the location of the product in the shelf image.

Input Product Image

Problem definitions and Submission

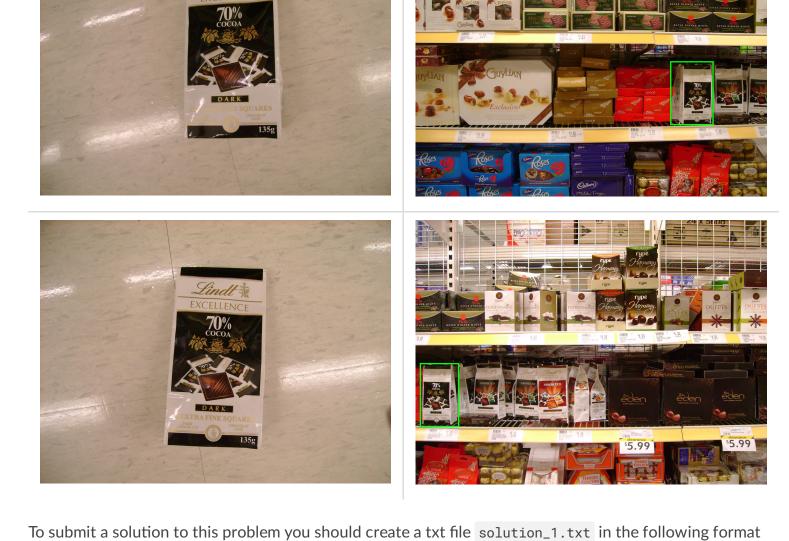
The following sample shows for a given input product image, and its corresponding shelf image, mark all the instances of the product. A given product image can be present in one or more shelf images, each of

Problem 1

which might contain one or more instances of that product. Your task is as follows. • For each product image, find all the shelf image which contains that product.

Corresponding Boxes on Shelf Image

The solution will be judged based on f1-score of solution and your submission.



52,1731,1884,954,2190,1419 53,1731,1884,954,2190,1419

52,1739,36,1053,315,1515 53, 1739, 36, 1053, 315, 1515 54, 1739, 36, 1053, 315, 1515 Here, each line denotes a single box. First number of this line is the id of the product image, second number is the id of the shelf image. Next 4 numbers are box coordinates in form of x_min, y_min, x_max,

The solution will be judged based on f1-score of solution and your submission. Problem 2

This problem is similar to problem 1 but instead of taking product image as input and giving shelf image as output, you will take shelf images as input and find all occurances of products that are present in the given set of 100 products. You might observe that all the visible products present in a shelf are not part of the

y_max.

54,1731,1884,954,2190,1419

Each line should have exactly 6 numbers.

given set of 100 products. Since we are only interested in those 100 products, you can choose to ignore the rest of the products in the shelf. To submit a solution to this problem, you should create a txt file solution_2.txt in the following format. 1739, 52, 36, 1053, 315, 1515

1739, 53, 36, 1053, 315, 1515 1739, 54, 36, 1053, 315, 1515

1739, 136, 1546, 514, 1782, 814 1739, 137, 1546, 514, 1782, 814 1739, 138, 1546, 514, 1782, 814 Here, each line denotes a single box. First number of this line is the id of the shelf image and second number is the id of the product present in the crop. Next 4 numbers are box coordinates in form of x_min, y_min, x_max, y_max. Each line should have exactly 6 numbers. The solution will be judged based on f1-score of solution and your submission.

DOs

How to submit

• Make sure the name of your solution file follows solution_n.txt format where n is the id of problem • Make sure you also attach the corresponding code files used to generate predictions

- Please maintain coding standards
- **DON'Ts** • Attach huge model/embeddings/cache files

• Make neccessary assumptions wherever needed

Deliverables

1. **Solution Files:** Txt files containing your solutions. Make sure you stick you naming and formatting mentioned in the problem descriptions.

generated files as mentioned in the deliverables.

that problem instead of the solution.

solutions for the problem.

2. **Code Files:** Attach all your code files used to generate the solution. 3. Writeup: A detailed explanation of your solution. It may also contain other approaches that you think will work for the problem and some comparison between the approaches. We would also suggest

Submit

You can choose to solve one or more problems mentioned above. To make a submission, email your zipped

you to submit your best approach for solving all 4 problems even if you are not able to generate

Points to ponder

- · As you can see there are no labels provided with the dataset and only visual similarity can be used. • Using a ML technique does not necessarily mean training a new model. Please feel free to use any pre-trained model for any task. • If you are not able to solve a problem, we would appreciate if you submit your best approach to solve