GTU

DEPARTMENT OF COMPUTER ENGINEERING

CSE 463 – Spring 2022

HOMEWORK 2

REPORT

(24/04/2022)

(Homework Pdf is not available)

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1. PROBLEM SOLUTION APPROACH AND ALGORITHMS

My problem that I have encountered in application was about image selecting.

I didn’t want to use global variables to store the value of input path. So I made inside of my ImageSelecting module as a class. In that class, I needed to hold values of some variables inside constructor . To initialize them, I holded them as string list.

```
class ImageSelector:
    def __init__(self):
        print("Opening the screen.")
        self.inputPathOfImages = ["",""]
        self.images = ["",""]
```

But after that, problem was checking if both images are selected and it wasn’t easy. Because if no images are selected, images[i] values were None. But when one of them selected both of them changes. So put another if condition to check if(self.images[0] == “”). But this had an other problem. “FutureWarning: elementwise comparison failed; returning scalar, but in the future will perform elementwise comparison”. The warning was because of problem between python and numpy arrays. Python thinks Scalar or a Numpy tkinks ndarray. So, instead I checked the lengths.

```
if( (self.images[0] is not None and self.images[1] is not None)):
    if(len(self.images[0]) != 0 and len(self.images[1]) != 0):
        print("Both images are selected")
        ObjectDetecting.ObjectDetector(self.images[0], self.images[1]) # Calling object detector
```

For sift, I used “SIFT_create()” method from OpenCV.

After this sift variable created, I converted images to grayscale for simplicity then used detectAndCompute(gsImage,None) to get the keypoints and descriptors.

Then I matched with cv.BFMatcher().match(descriptor1, descriptor2)which is brute force match.to my Homography module

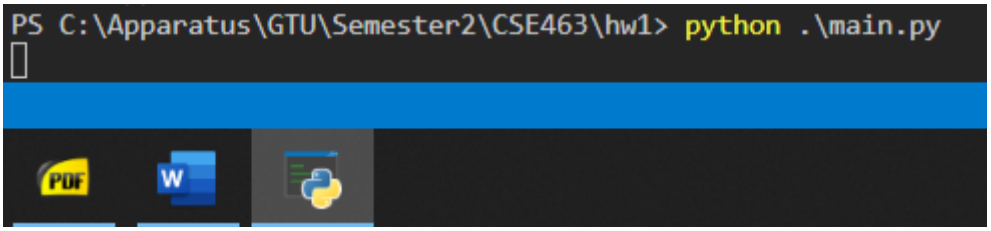
Then I sorted with sorted method by the distance to get the best matches.

```
matches = self.matcherAndSorter(descriptor1, descriptor2)
finalImage= cv.drawMatches(image1, keyPoint1, image2, keyPoint2, matches[:100], None ,flags=cv.DrawMatchesFlags_NOT_DRAW_SINGLE_POINTS)
```

At the end I drawed the best 100 matches with drawMatches().

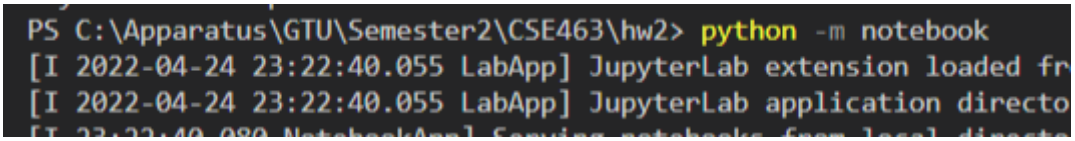
3) TESTS AND RESULTS

Running python code with `python main.py`



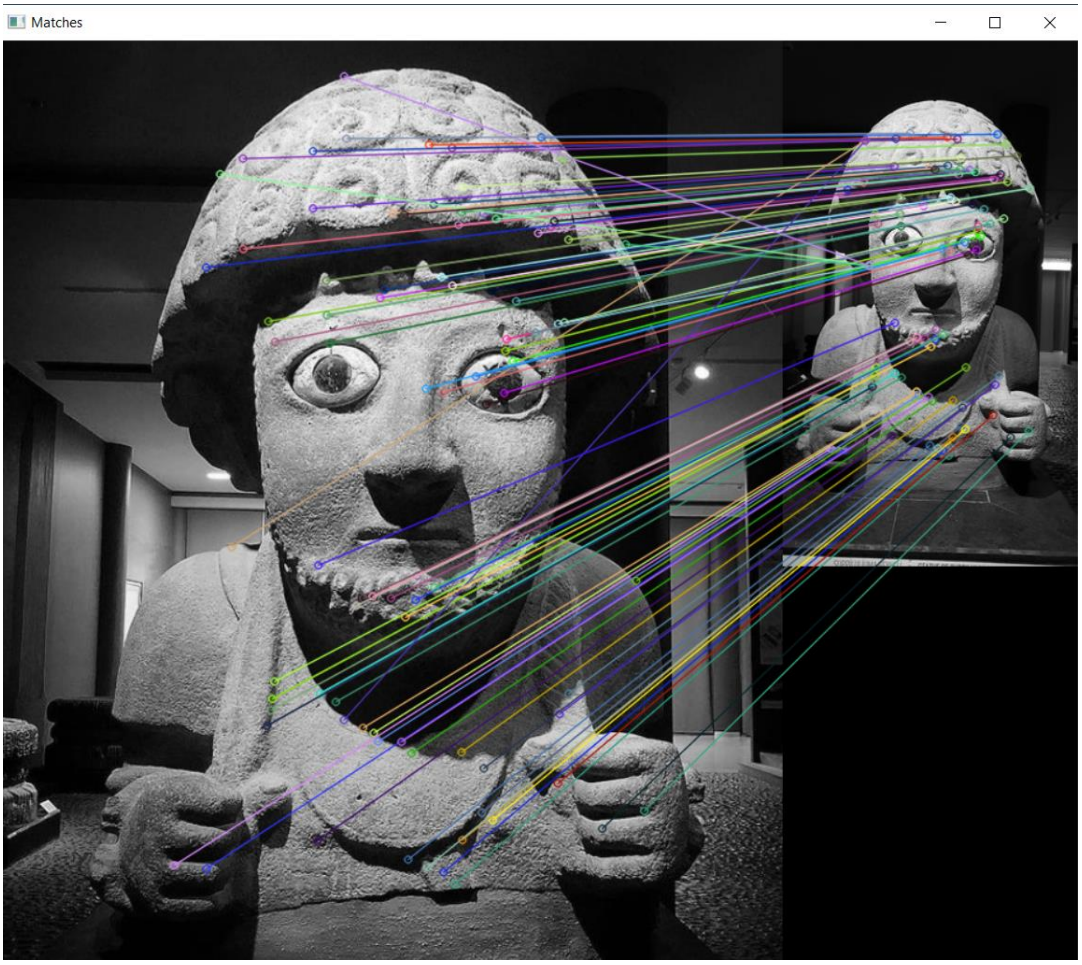
Running with Jupyter Notebook

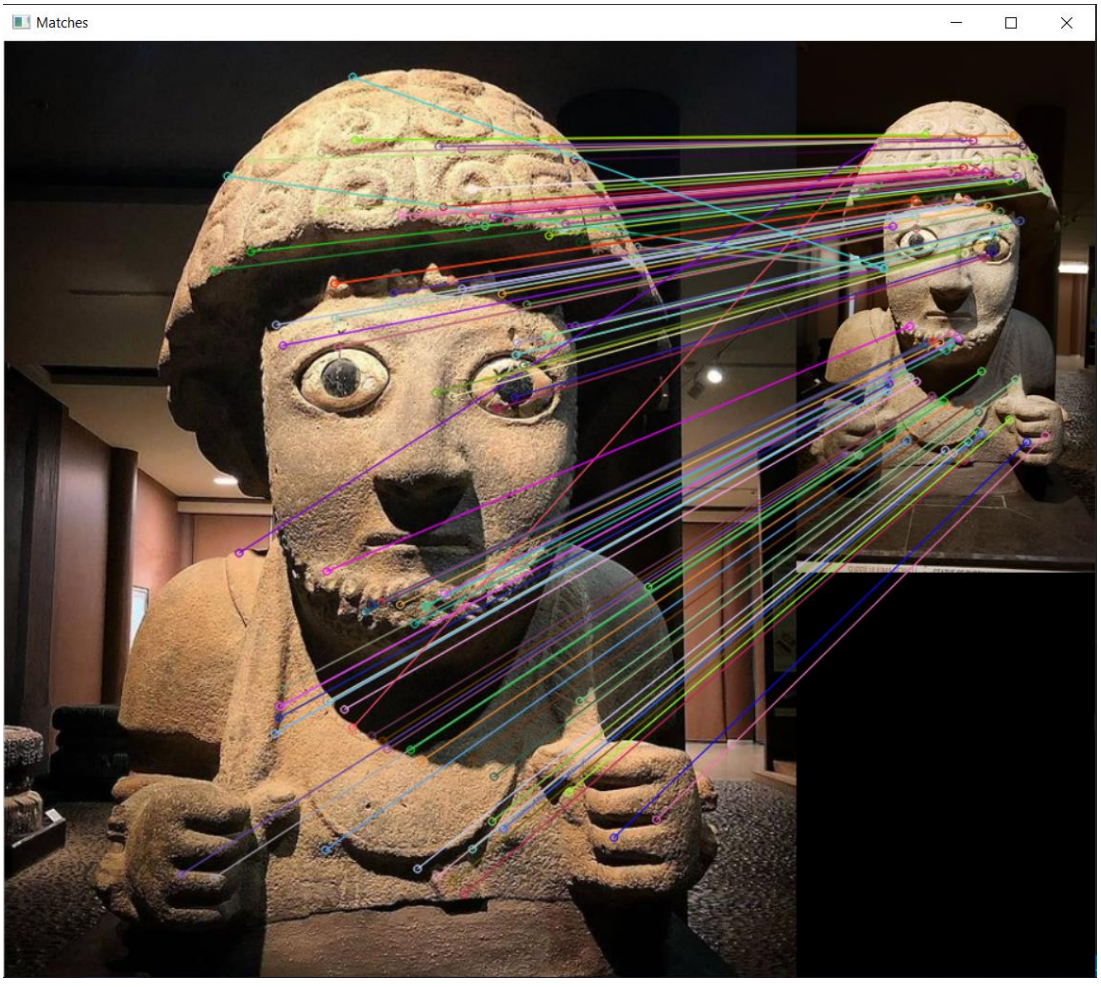
Homograph.py and PointSaving.py should be in the same folder with notebook file nbook_main.ipynb



Menu Screen to select 2 images

Example output from 2 different images





Another example