Computer Vision Lab 1
CSE 483

Spring 2023

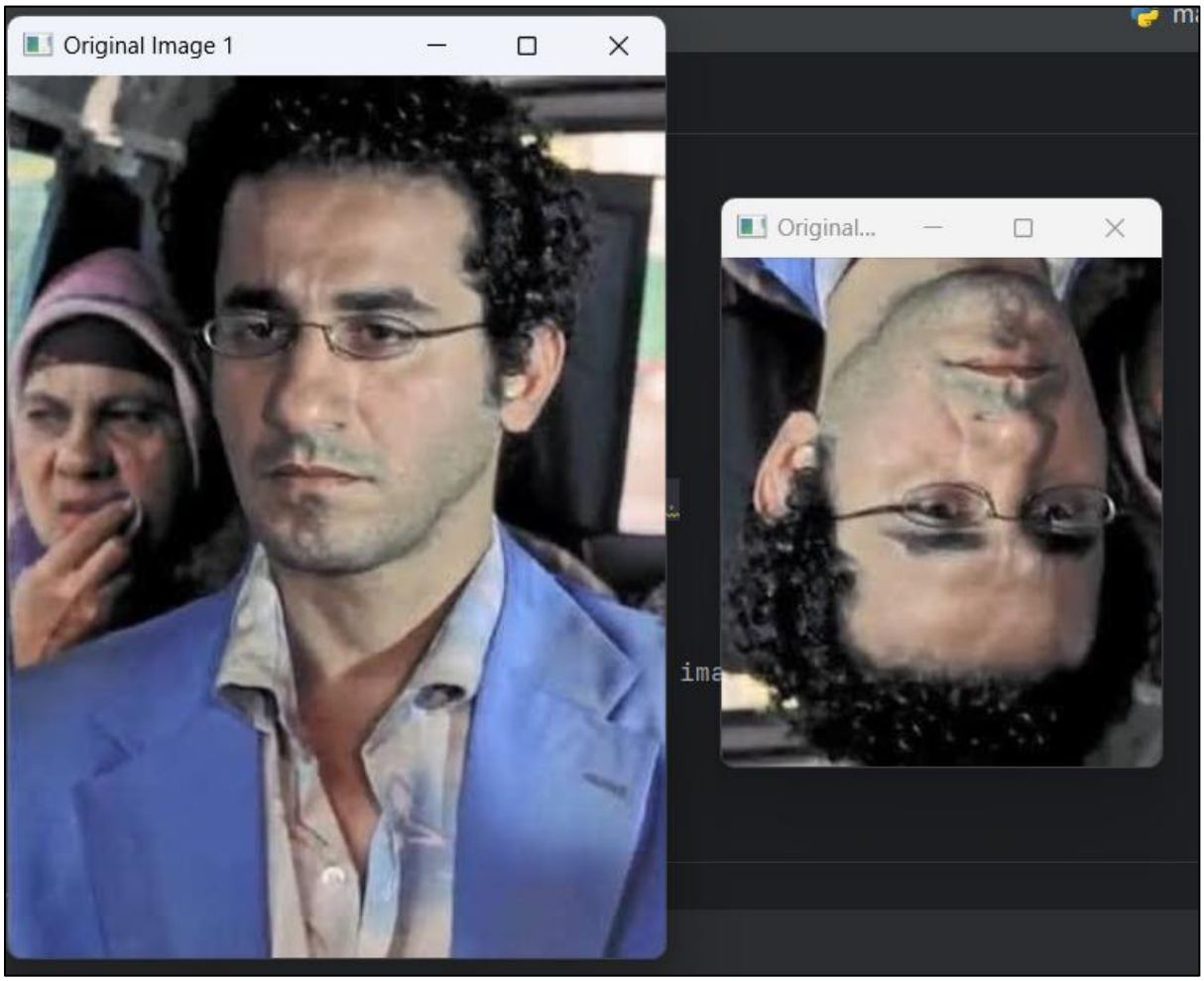
Prepared By: Ahmed Sameh Mourad 19P5861

Code Steps:

1. Feature Extraction (feature_extraction_sift):
    - Convert images to grayscale.
    - Detect keypoints and compute descriptors using the SIFT algorithm.
2. Feature Matching (feature_matching):
    - Extract keypoints and descriptors from two images.
    - Find matching keypoints between the images using a brute-force matching technique.
    - Filter the matches based on a distance ratio test.
    - Draw the matched keypoints on the images.
3. Displaying Feature Matching (show_feature_matching):
    - Load two images.
    - Extract keypoints and descriptors from both images.
    - Perform feature matching and display the matched keypoints on the images.
4. Image Scaling (image_scaling):
    - Resize an image to a specified scale percentage.
5. Image Rotation (image_rotation):
    - Rotate an image by a given angle.
6. Image Translation (image_translation):
    - Move an image by a specified distance in the x and y directions.
7. Displaying All Transformations (show_all_transformations):
    - Load an image.
    - Scale the image and display it.
    - Rotate the image and display it.
    - Translate the image and display it.

8. Main Code (main.py):
    - Show the Original Images.
    - Extract & match the features of the original images, then show the matched images.
    - Scale, rotate, translate the image then display it.

Original Images:



Feature Matching:

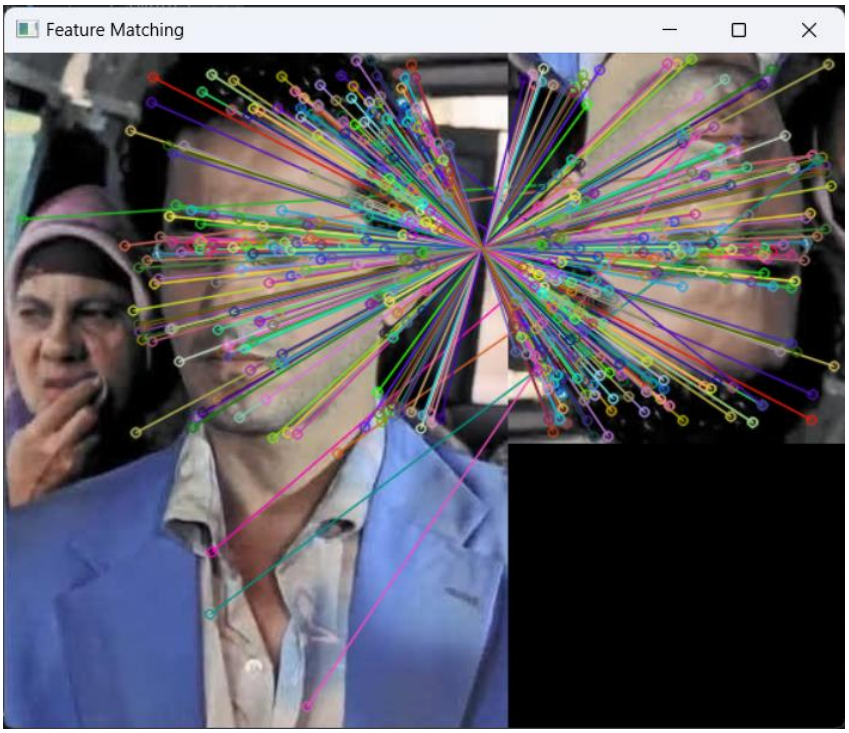
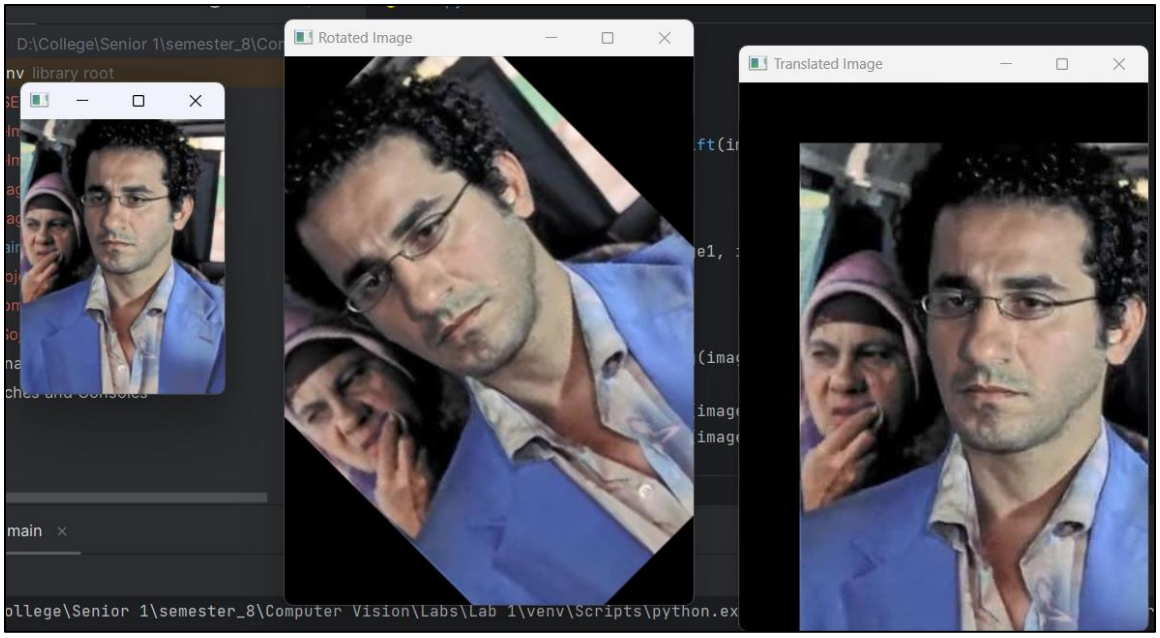
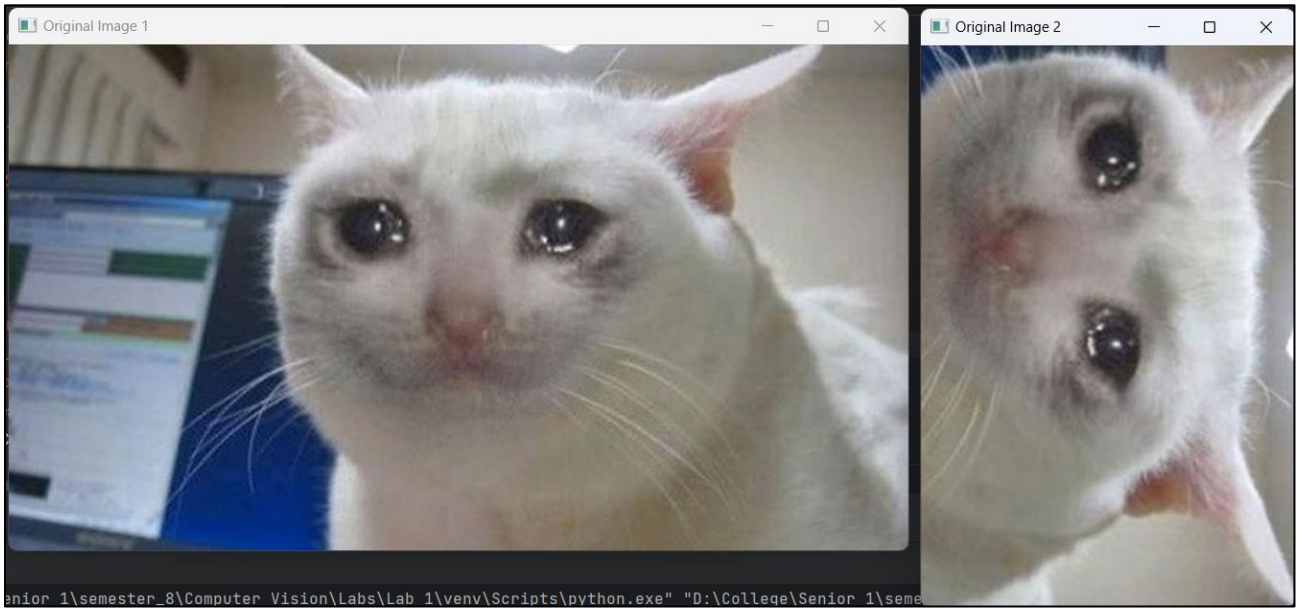


Image Transformations (Scaling, Rotation & Translation):



Original Images:



Feature Matching:

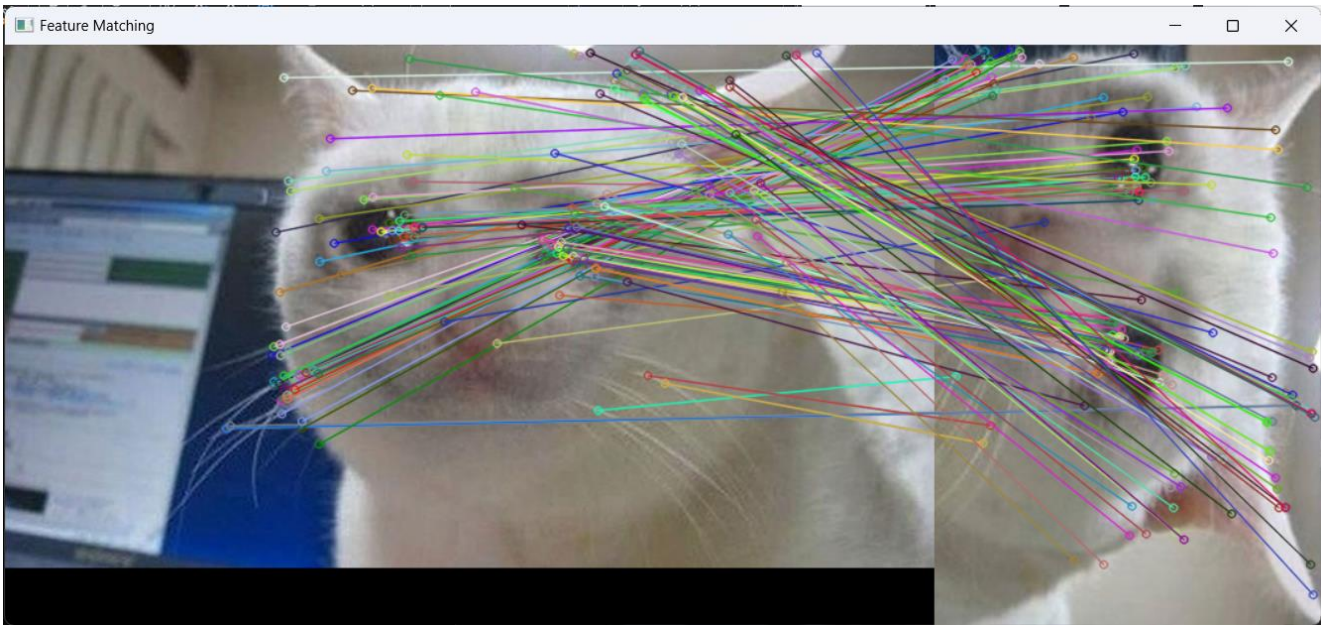


Image Transformations (Scaling, Rotation & Translation):