NTUST course: Computer Vision and Applications (CI5336701, 2024 Spring)

Homework#2：Swap the contents of two photo frames in an image by homography

Date Due：2024 Apr. 2nd, PM11:59。

Description

1. Writing a program for reading a JPG image, calculating homography mapping matrixes between two photo frames in “Swap_ArtGallery.jpg” (enclosed file), swapping them, and generating a new fake image.
2. Please manually define the region of these photo frames (for example, use one image-viewer, ex. XnView, to find coordinates on images and write them down), and no need to write mouse interface for picking up the points. And, manually select at least 4 corresponding point sets for estimating a 3x3 homography matrix. After you swap the regions, please save it as another JPG file (named as Student_ID.jpg).
3. In this homework, you can use any method including third-party lib. to perform, but please do NOT directly use any commercial software to create the image for this assignment.
4. There are several features your program should have:
   1) Calculation of homography matrix (between two photo frames) from point sets.
   2) Able to define the region, says pixels within two frames, which will be processed.
   3) Able to swap contents of two frames.
   4) Save as an image (Student_ID.jpg).
5. There are at least two types of data you should upload to https://moodle2.ntust.edu.tw by date due
   1) Source code in Python, C++/C or Matlab. (with simple comments)
   2) The result image created by your program.
   3) Execution files (.exe and related dynamic link file .dll), if applicable. This is optional.

Hint: the snapshot of image in this assignment, (source JPG image will be given)

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