Project 1

CAP 4453

Fall 2021

Goal:

Make a python program that rectifies images from documents (like camscanner).

Deliver:

1. Code with comments. Program must run in colab.
2. Report. Description of the method used with conclusions.

General Steps:

There are 3 steps to do this:

1. Find the corners of the document to be rectified
2. Find the transformation that maps points A, B, C, D to a new set of points in (0,0), (H,0), (H,W), and (0,W). (see figure below)
3. Perform warping operation (backward) using the found transformation.

Input image   Transformed image
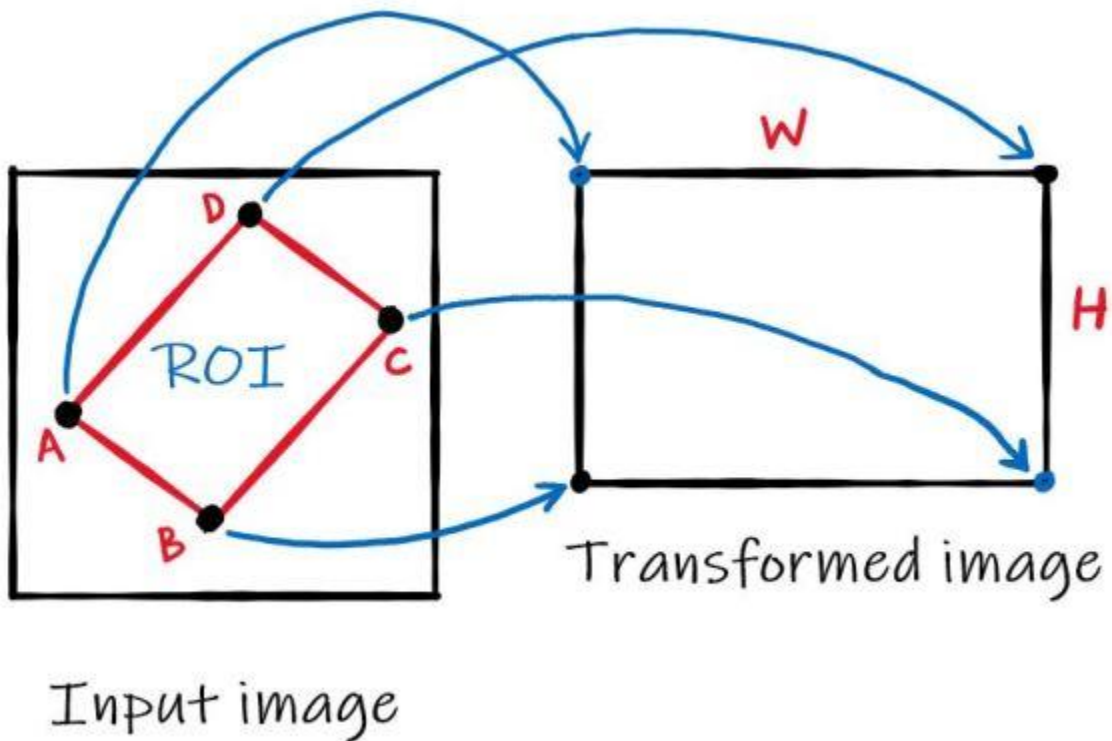
Manual mode (80%)

Your first task is to probe your algorithm works. Try your algorithm in two pictures from your choice.

- Make sure to use the highest resolution possible, and the image looks like a projection.

- Avoid fisheye lenses or lenses with significant barrel distotion (do straight lines come out straight?).

   a.   You will provide the user a way to select the four corner points.
   b.   Use the method you did on homework 5, H = computeH(im1_pts,im2_pts) to compute the homography that take you from input image to the transformed image.
   c.   Perform backward warping with the method you created in homework 5. imwarped = warpImage(im,H). You can use the opencv method to perform warping in case that your method does not work or want to compare it.
   d.   Show your warpped image.

Fully automated document recovery (20%)

Utilizes any possible method or combination of methods to find the corners of the document of the input image.

Explain the idea behind your method.

Try your algorithm in the following image:

bebi64i3kbb31.jpg (1953×1704) (redd.it)

Show your results.

Do you have other ideas in How could make your algorithm better (robust to different type of images, better corner localization, etc.)