

Ramya Rao

Gurleen Singh Dhody

Steve Babcock

Computer Vision

Report on Assignment 2 - 3

For part three, we did the the wrapping application using the homography matrix function which we implemented using RANSAC.

We also implemented bi-cubic interpolation to provide smooth images.

To find the transformation we did the following:

$xA = A'$ [A = Source Image coordinates, x = Homography matrix, A' = coordinates in the Target Wrapped Image]

$A = \text{inverse}(x) * A'$

Since we have all the intensity values of A at all the discrete locations. We need to find the intensity values for A' at all pixel values in the discrete resolutions. We move over one pixel coordinates each time. Multiply the coordinates by the inverse of homography matrix. And if we get coordinates that lie in the source image we copy the coordinates back to the target image.

The part3-2 is a wrapper over the code to create an application for warping query images plane to the first(base) image.

Some results we got: (lincoln.png) – part3-1



If you find the folder path – you can refer the results for wrapping application

/gdhody-wsbabcoc-ramrao-a2/results/ImageWrappingApplication/Folder1

/gdhody-wsbabcoc-ramrao-a2/results/ImageWrappingApplication/Folder2

/gdhody-wsbabcoc-ramrao-a2/results/ImageWrappingApplication/Folder3

We ran the wrapper application 3 times containing results of the warped images:

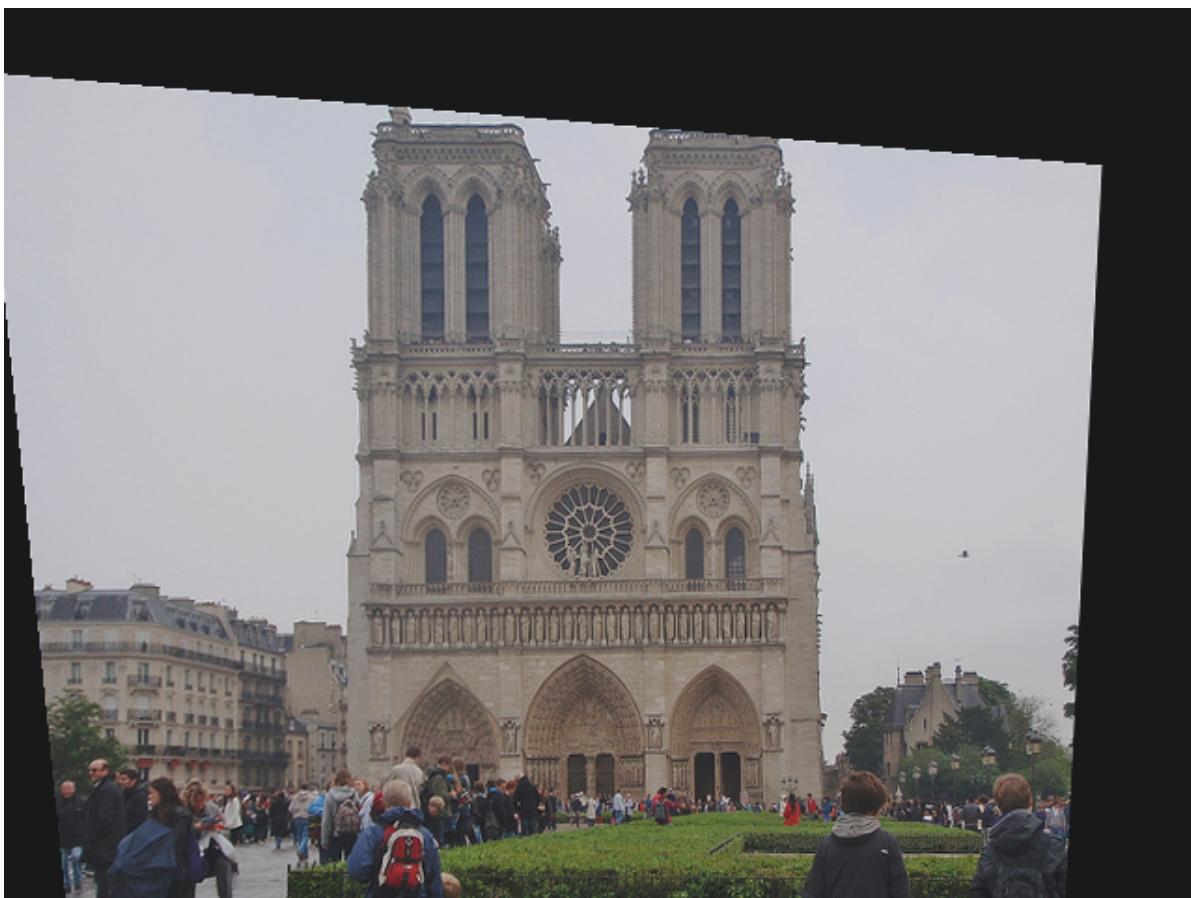
Base Image : Folder1



Before



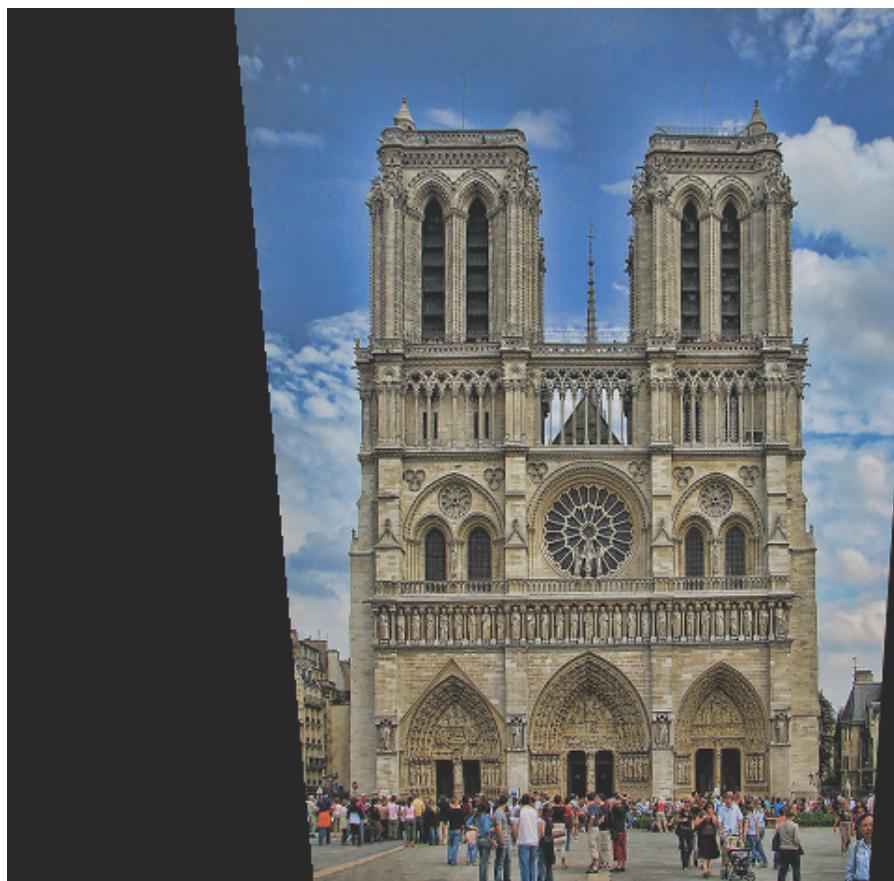
After



Before



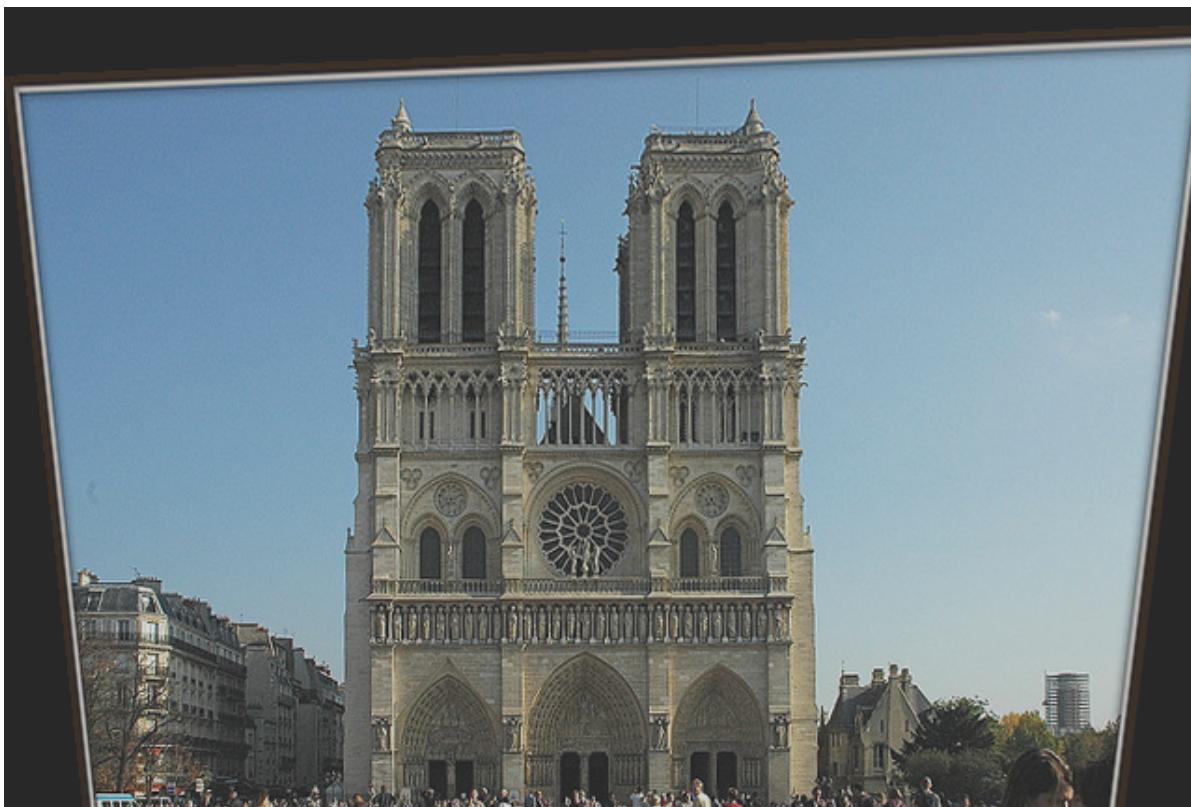
After



Before



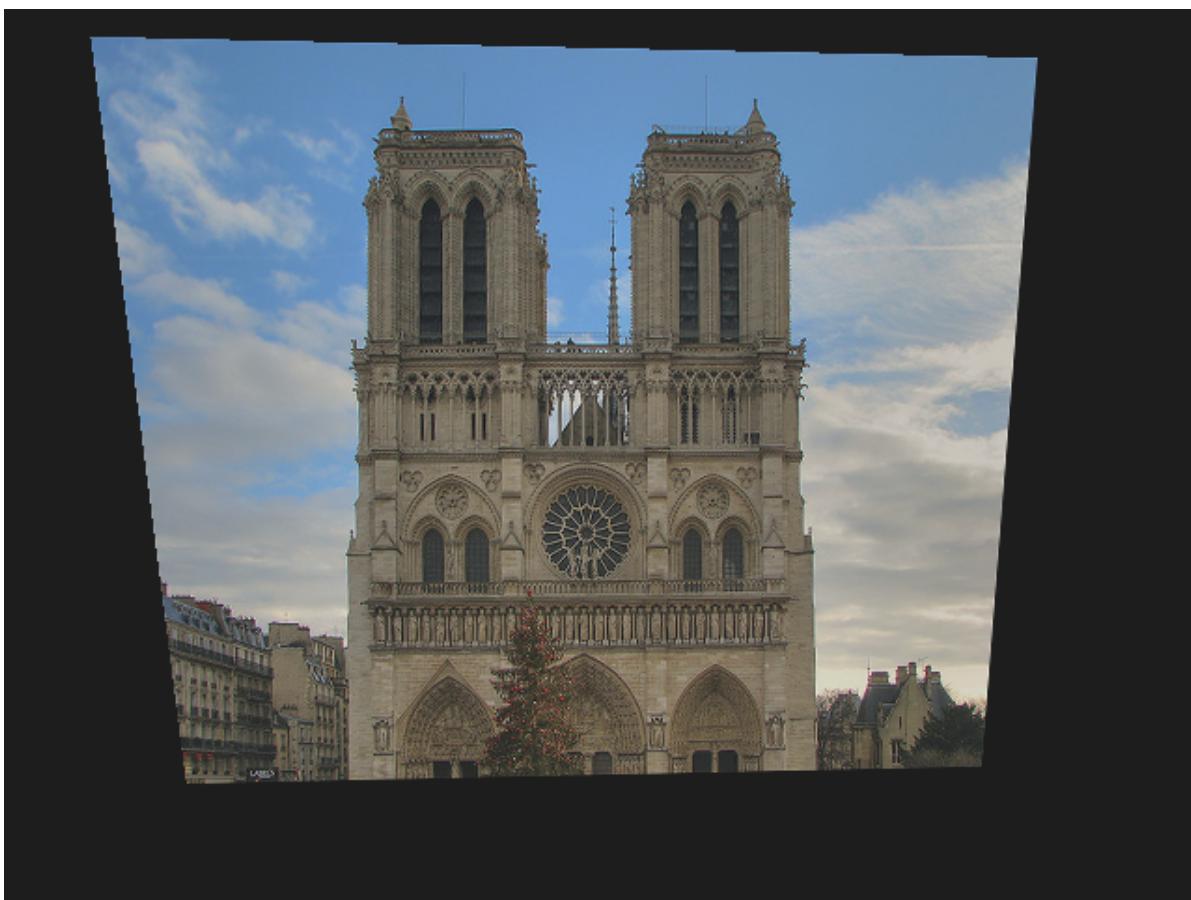
After



Before



After



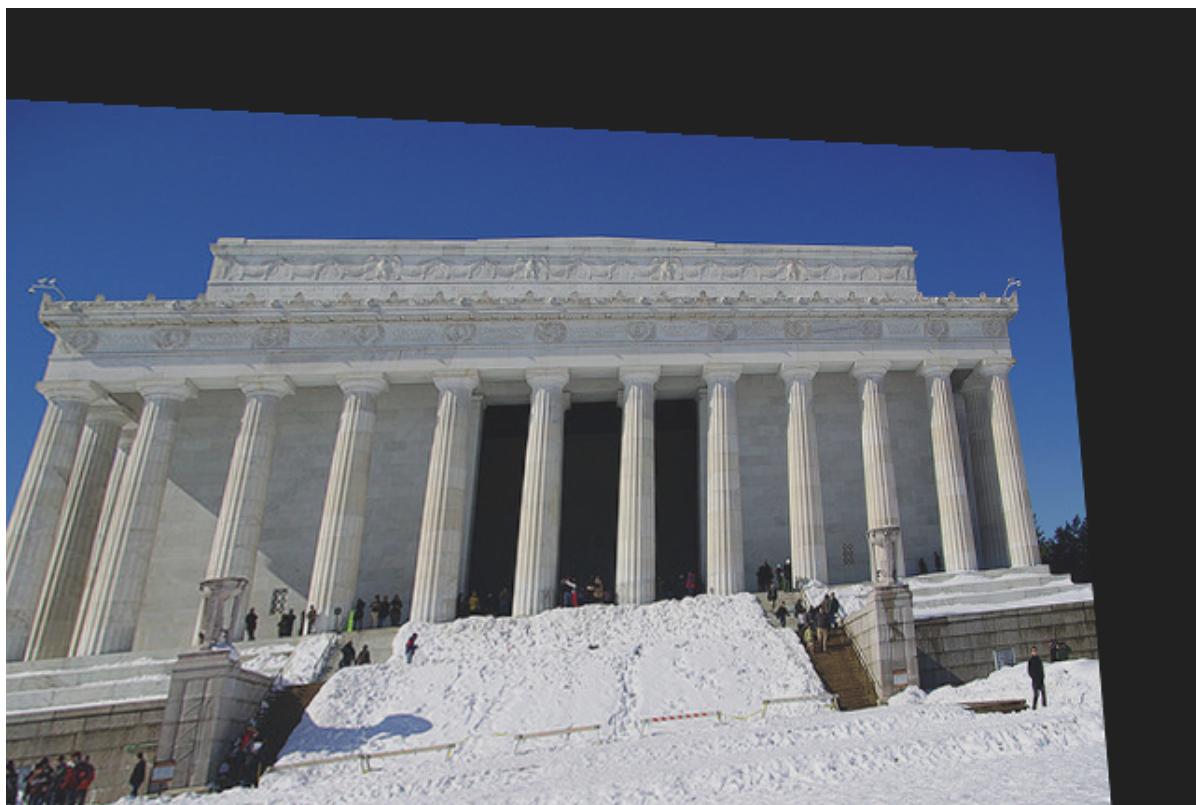
Base Image : Folder3



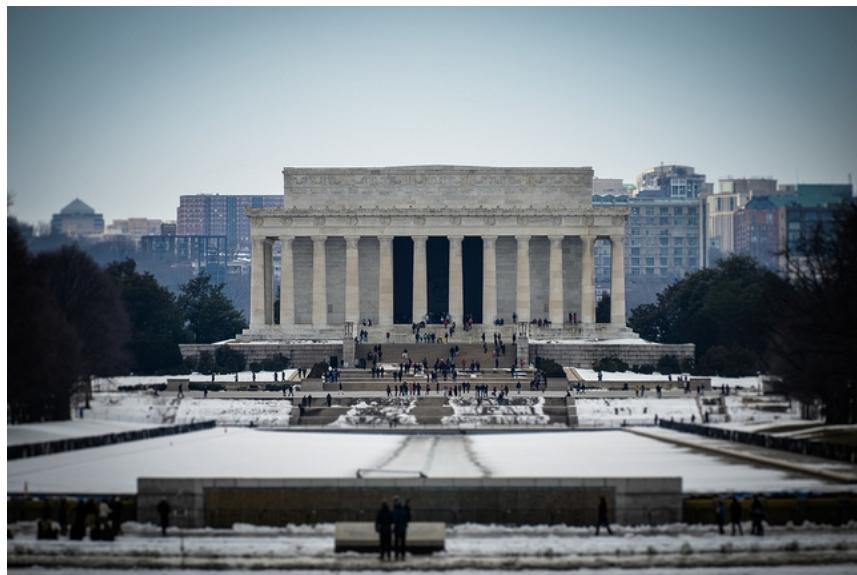
Before



After



Before



After



With the results we found out that the lincoln images were quite hard to wrap. Since the images had many common features (SIFT points). Which led to poor matching. That led RANSAC to select a bad homography matrix which eventually will end in a poor wrapping.

Notredam Images were on the other hand quite successful that led to good matches, a good selection of homography matrix based on RANSAC therefore selecting points from large inlier's as supposed to lincoln images.

We have also included sift points matches for wrapped application to understand where warping failed and can be found in the image folders listed below.

Example:

