Q. 2) Part 2.1)

After implementing with RANSAC, following are the results that were observed.

a) Before RANSAC:# of matches found : 37

Drawing 1: Without using RANSAC

b) With RANSAC:# of matches found : 24

Drawing 2: With RANSAC

From the above results, it can be seen that by using RANSAC, clearer correspondences can be obtained. By using RANSAC, even no of false matches are reduced.

Q.2)

Precision calculation:

Image name	Precision
Colosseum	33.33
Bigben	11
Trafalgarsquare	22
Notredam	22
Empirestate	33
Louvre	22
Sanmarco	33
Tatemodern	22
Londoneye	22
Eiffel	11

From the above results, it can be seen that the attraction which were easy to recognize comparative to others were **Coloosseum, Empirestate and Sanmarco** each with nearly 33% precision.

Eiffel and Bigben were difficult to recognize amongst others with 11% precision recorded.

Part 2.2)

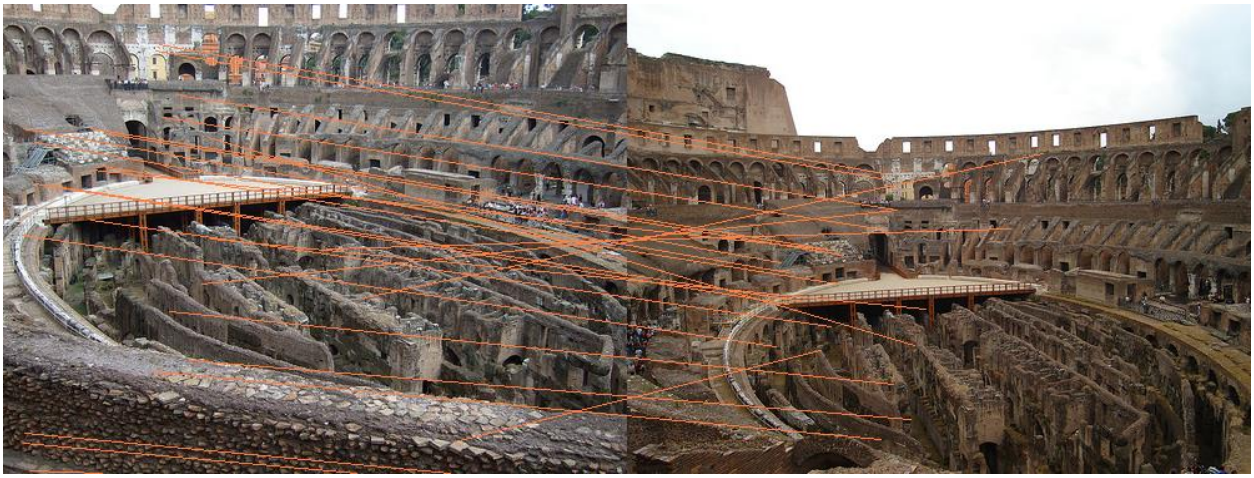
How to run:

- Run 'make' command on terminal.
- Once compilation completes, execute './a2 part2.2 <filename1> <filename2>

Observations:

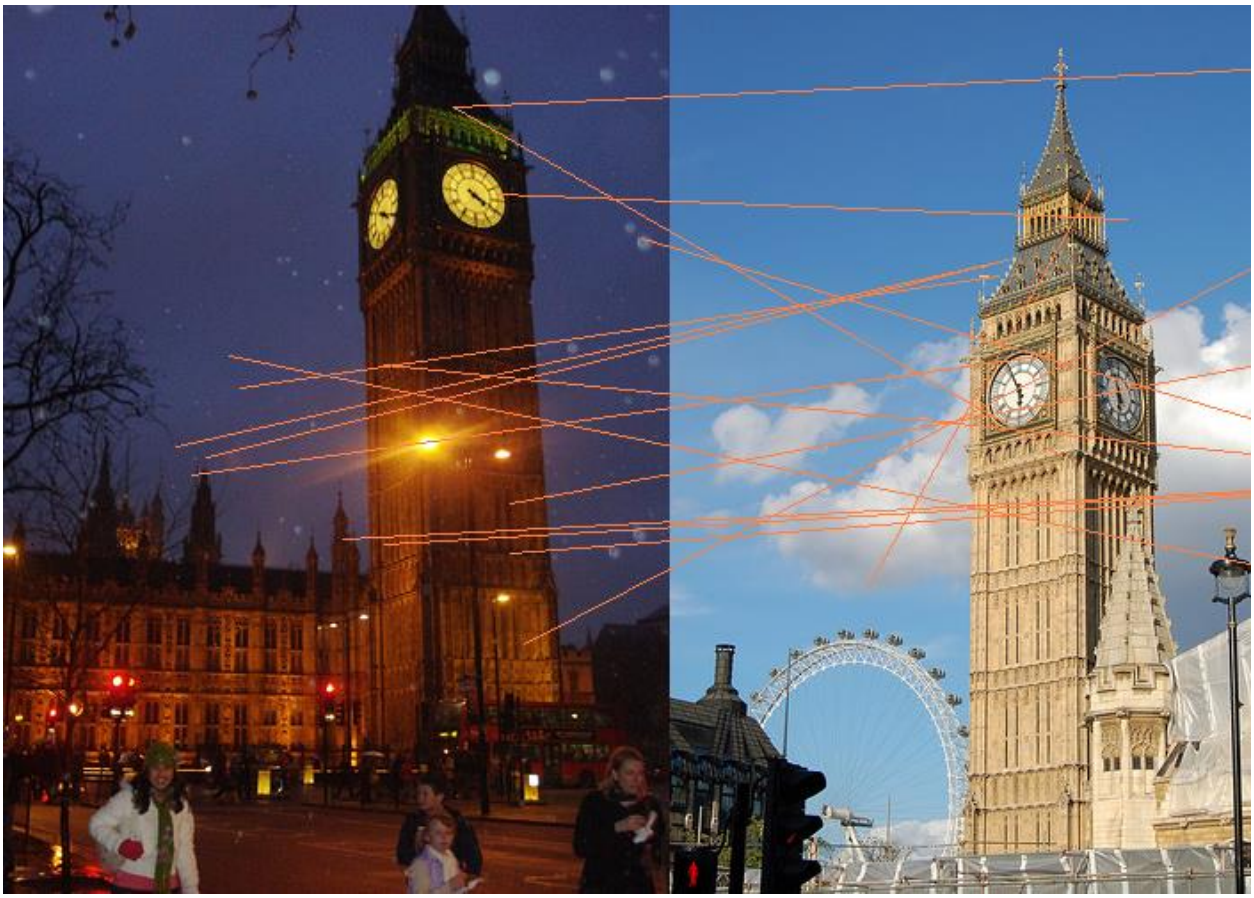
Speed Improvement: There is not much speed improvement when the number of SIFT descriptors in the query image are small or the number of query images are itself very few. There is definitely some improvement when the number of query images increasing.

The following results were generated with w = 5 and k = 10 for two images:



Number of total matches: 29

Time 7.40625 seconds



Number of total matches: 16

Time 2.95312 seconds

Accuracy: Accuracy depends on the quantization factor, value for K and number of best ones chosen after comparing the summarized descriptors. The best value after many iterations were found to be:

- W – 5
- K – 8-10
- Number of best ones chosen – 2-3

The algorithm increases the speed of image retrieval by 20-25% in many of the cases depending on the value of K, with a relation speed of image retrieval being inversely proportional to the value of K. As the value for K increases, the speed gets a little slower. Value for W along with K controls the accuracy. As we increase the value for K, accuracy increases till some point after which value for K does not have much effect on the result.

Approximation does affect the result when the value for K is very low. The result shows lots of false positive.

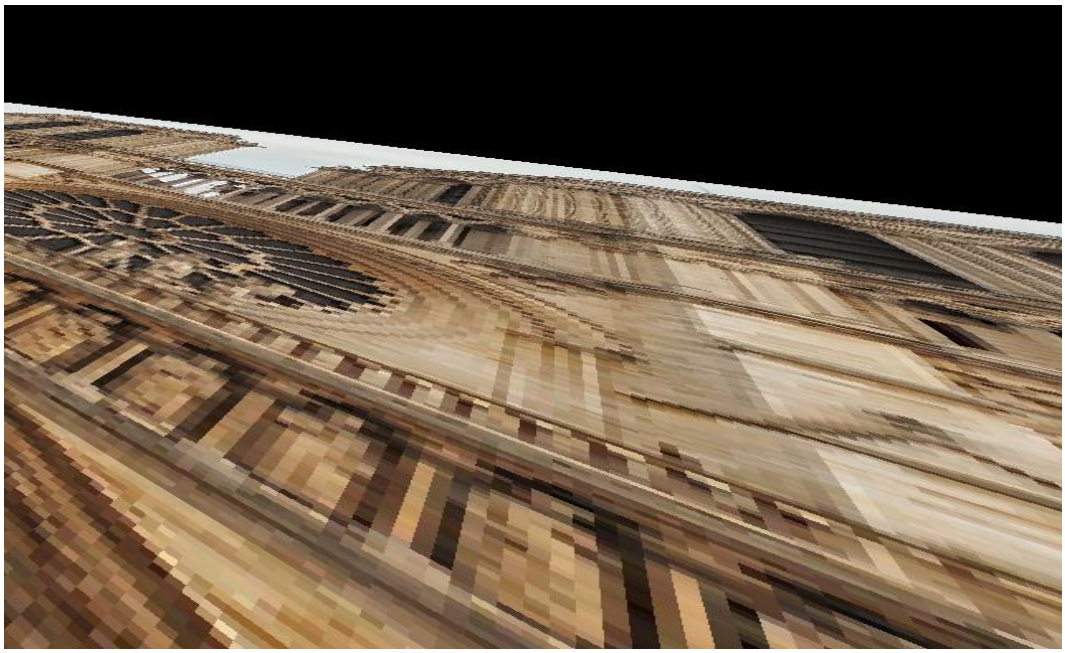
After performing 90 iterations on different images, the best possible value for W and K was found to be 5 and 10 respectively.

Q. 3

1) Using the **given coordination matrix** for the image “lincoln.jpg”, implementation observed the following output

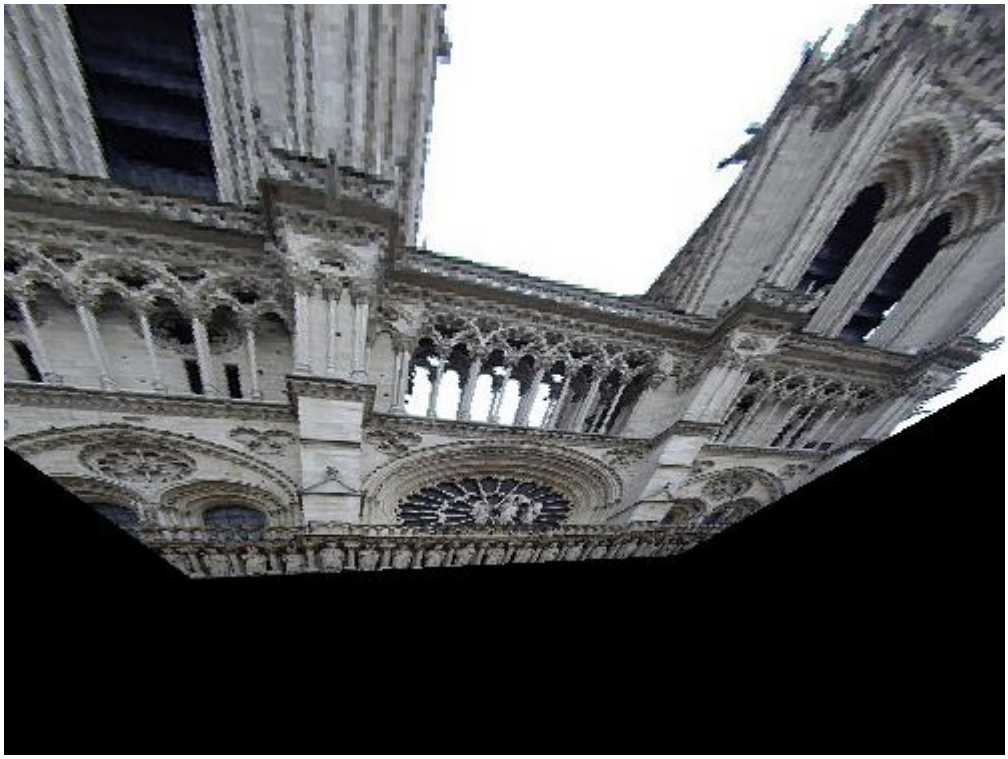
2**) Implementation of images sequence warping**:

By using the homography estimation from part 2 and using the same for image warping gave the following results. Few were close to correct matches and rest were not giving the proper transformations due to false matches of sift correspondences and thus giving improper

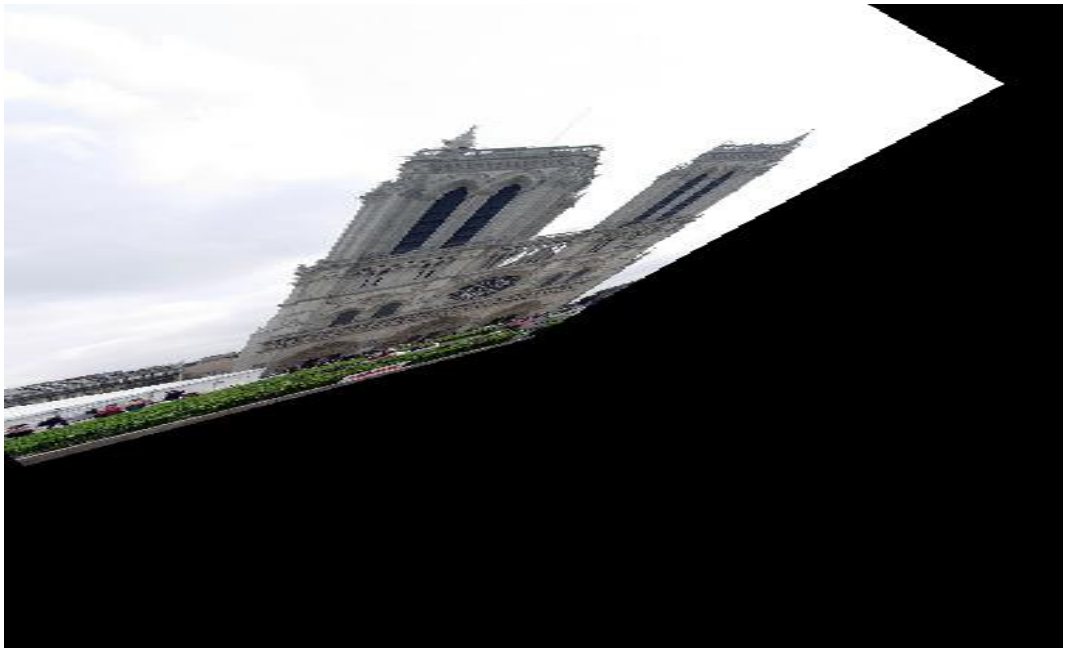


homography estimation.

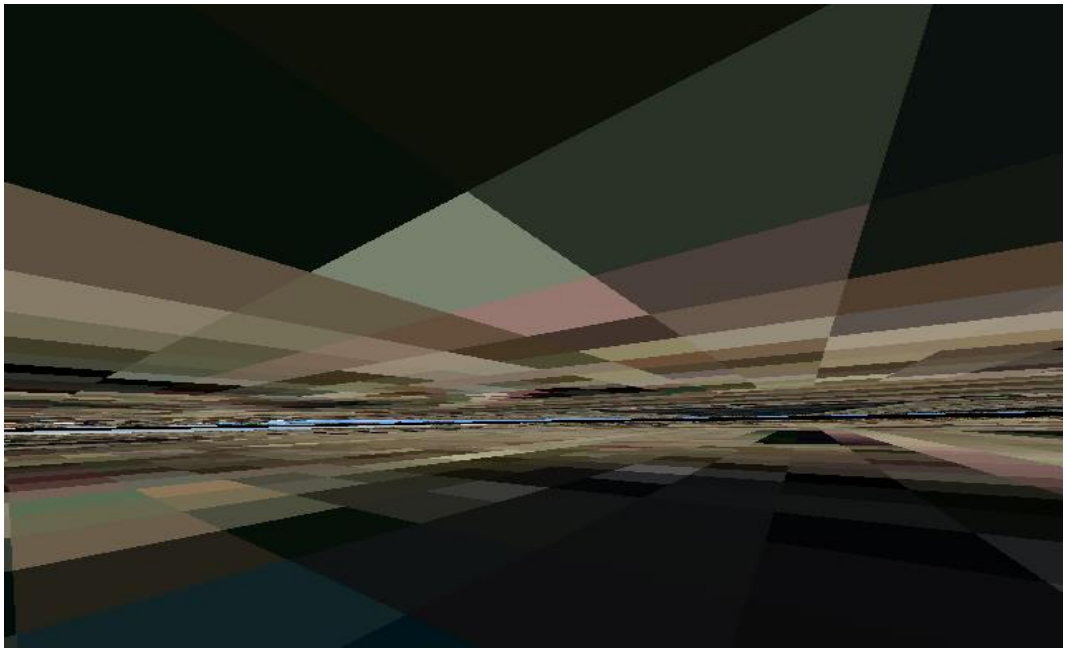
Pretty good samples:

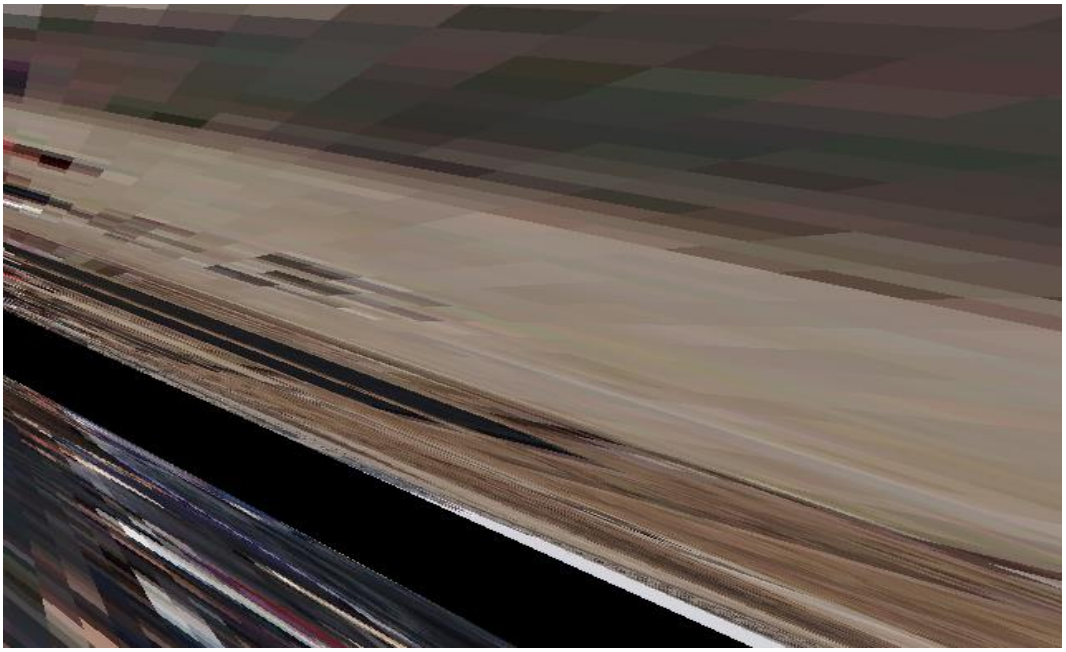


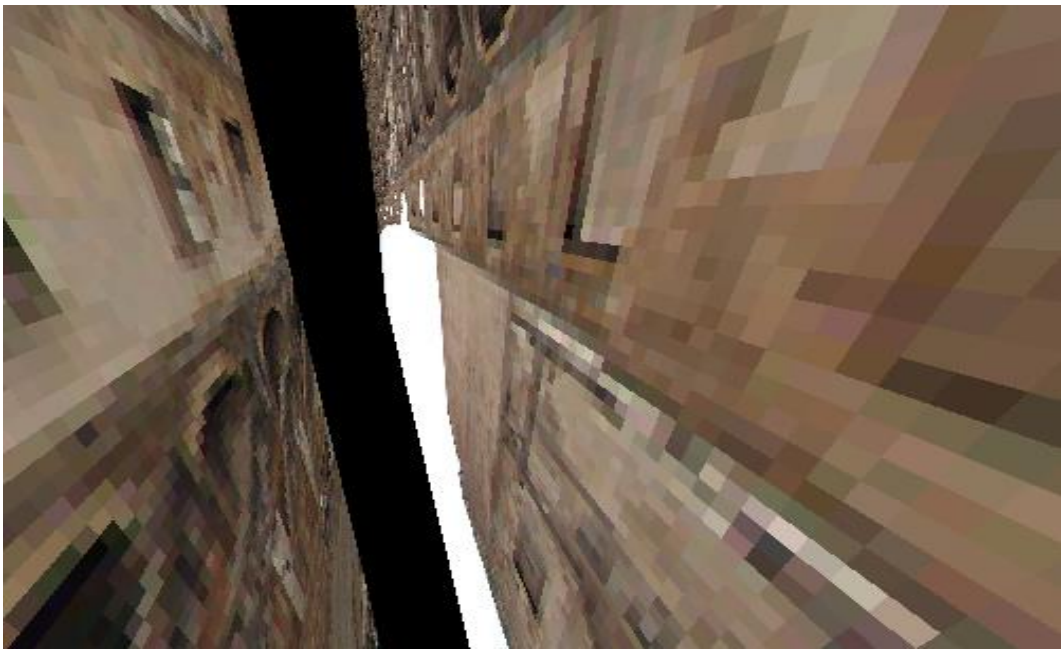

THE NATIONAL GALLERY



Warping did not worked:







From the above results, it can be seen that warping worked for few images to an extent while for others it did not work well.