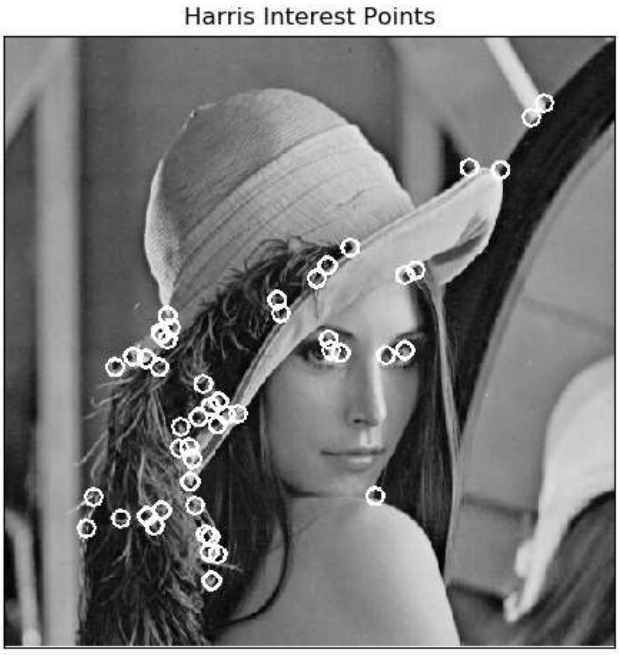
Computer Assignment 4

Image and Video Processing

AAKAASH JOIS – N14182682 – AJ2309

The above image is used as the test image for the Harris detector.



We can see that the Harris detector identifies most of the corner points in the image. The detected features make sense.

Harris Interest Points - Rotate 2 degrees

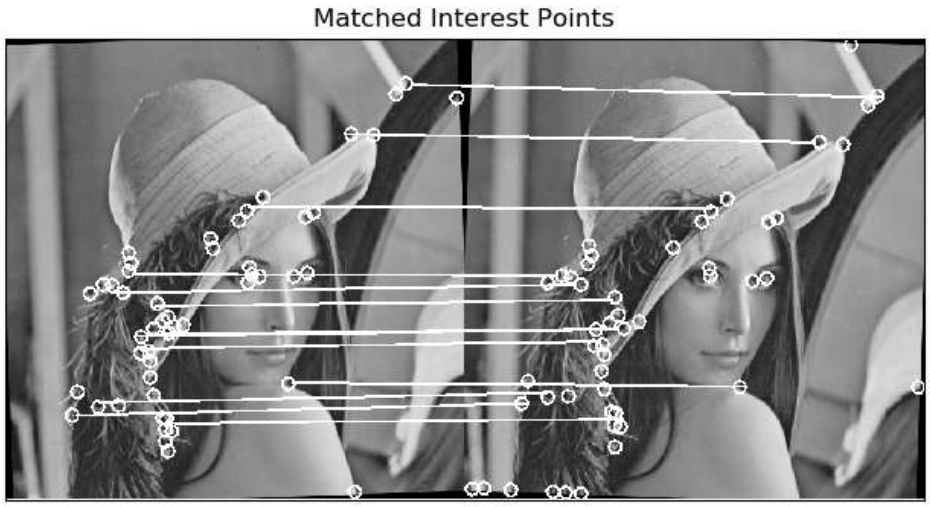
Harris Interest Points - Rotate -2 degrees

We can see that most of the points detected as the same when the image is rotated. Some points are different, but these lie on the edges of the image and are being detected due to the zero padding when the image was rotated. When the subject of the image is concerned, the detected feature points are the same. We can clearly see that Harris feature detector is rotating invariant.

Harris Interest Points - Scale up by 2

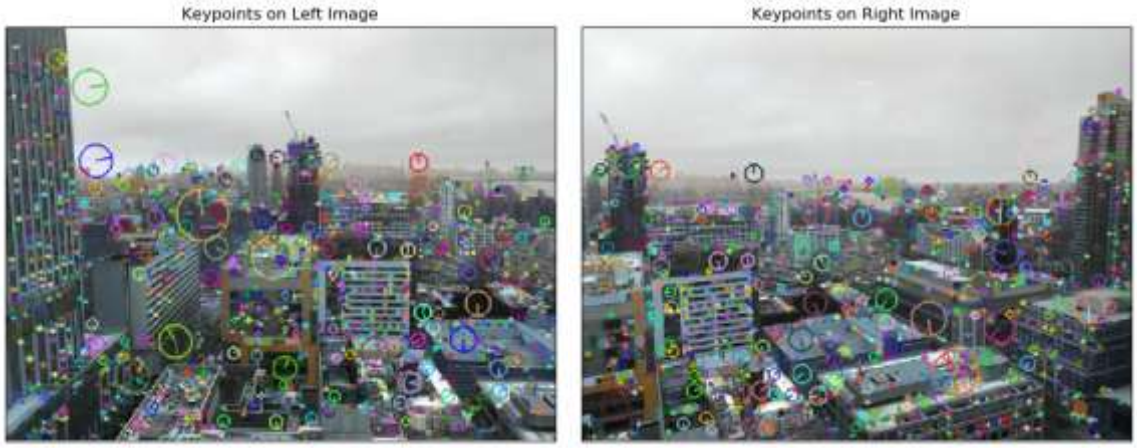
Harris Interest Points - Scale down by 2

When the image is scaled, we can observe that most of the detected are different. The size of the circle appears different because the radius stays the same but the image size changes. So when the images are made the same size, the circle change. We can see from the above images that Harris feature detector is not scale invariant.



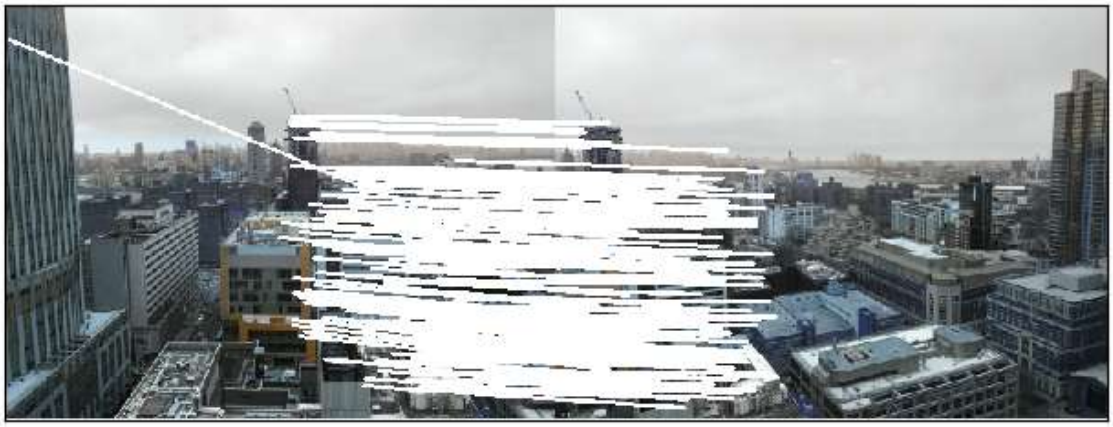
This image shows the matched points between the two images. We can see that most of the points at the edges of the image are not matched. This matched result was for ***r=0.5***.

The above two images are used for stitching the panorama.



The above image shows the SIFT feature points for both the images. The radius of the circle matches the size of the feature point and the line in the circle shows the orientation.

Matched SIFT Points



The above image shows the SIFT points matched between the left and right image.

Transformed Image

The above image shows the right image transformed using planar homography.

Stitched Image

This image shows the final stitched panoramic image.