

## COMP70058 Computer Vision

### Tutorial 4 - Image Sequence Processing

1. Implement the Harris corner detector.
2. Apply your code on the two images below which correspond to files “img1.pgm” and “img2.pgm” in the “Zoom+rotation ” folder of the test datasets provided at the following link:  
<http://www.robots.ox.ac.uk/~vgg/research/affine/>



Boat Image 1



Boat Image 2

3. Select a feature descriptor of your preference (e.g SIFT, SURF and many more) to match the extracted corners between the two images using nearest neighbour matching.
4. Eliminate ambiguous matches using the Nearest Neighbour Distance Ratio approach to match your features. According to this approach, a match is considered ambiguous when it is not significantly better than the second best match. The ratio test defined below can be used to make this determination:
  - a. Compute the feature space distance between a feature vector in “Boat Image 1” and its nearest neighbour in “Boat Image 2”.
  - b. Compute the feature space distance between the same feature vector in “Boat Image 1” and its second nearest neighbour in “Boat Image 2”.
  - c. If the ratio between the two distances is greater than a predefined threshold, eliminate the match as ambiguous.
5. Use the Homography matrix  $H_{1 \rightarrow 2}$  provided in the same folder as the images to compare the accuracy of the above feature matching approaches.