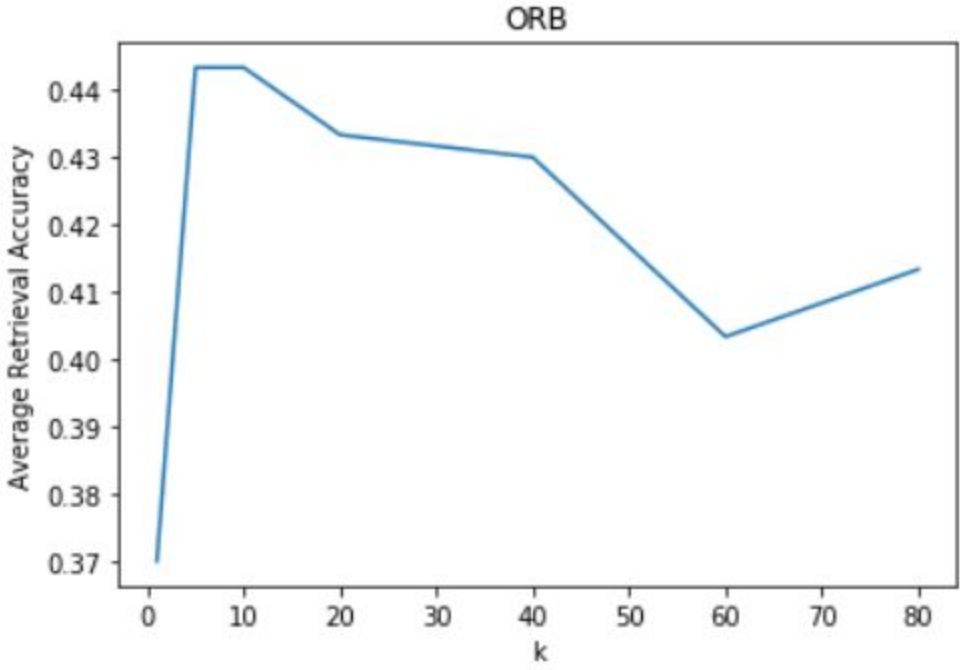
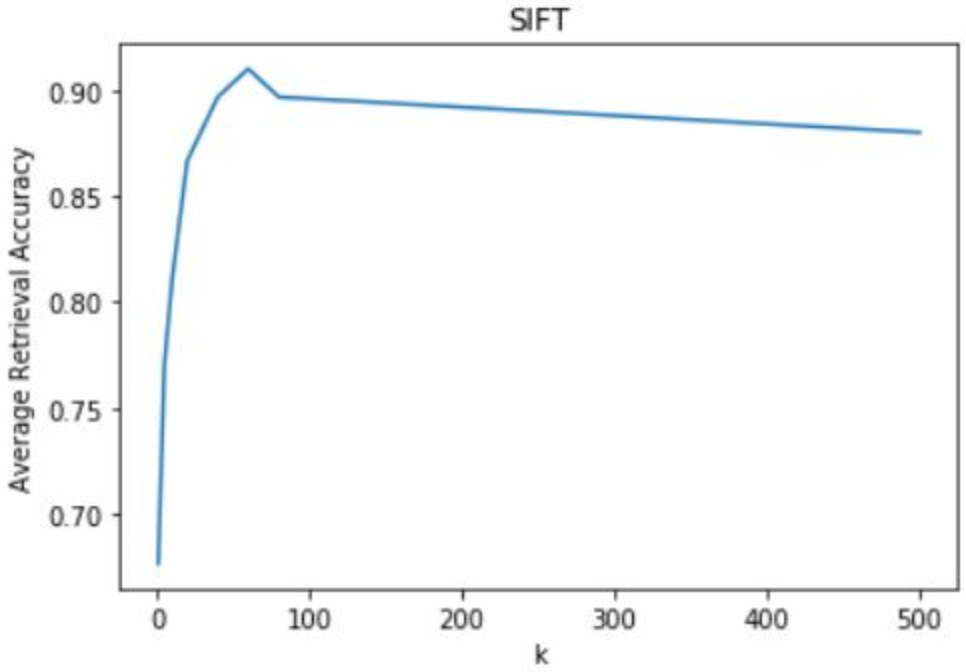
Image Retrieval

Submitted by: Jatin Dholakia (16110066)

- 60 images of 10 scenes (6 images each) are captured using a mobile phone for the dataset.
- Each image has a dimension of (3000,4000) pixels.
- The dataset has the following naming convention: Images with filename 0-5 belong to scene 1, 6-11 belong to scene 2 and so on.
- The images are downsampled (preserving aspect ratio) and their SIFT and ORB feature descriptors are computed.
- Each ORB feature has a dimension of 32 and SIFT feature has a dimension of 128. OpenCV commands are used to compute the features.
- Feature matching is done in the following way for two images I1 and I2:
    - For every feature in I1, euclidean distance is computed with all other features in I2 and the minimum distance is stored.
    - All the distances of I1 are sorted and top k summed to find the overall similarity between the images I1 and I2.
- The above steps are repeated for every image with every other image in the dataset.
- From the top 5 images with lowest distances for a particular image, the retrieval accuracy is calculated and plotted against k.

Results are shown below:




SIFT
Average Retrieval Accuracy
0.90
0.85
0.80
0.75
0.70
0
100
200
300
400
500
k