CHAPTER 6

CONCLUSION AND FUTURE WORKS

The problem of search and retrieval of images in ever growing digital technology has attracted tremendous attention in recent years from the research community. Most of the CBIR systems are based on global features which use the visual features. The main drawback of Global CBIR system is semantic gap. The goal of this research is to address the problem of semantic gap using local features.

A methodology based on SUSAN and DCT local features a CBIR system was implemented. The performance of the system was analyzed with and without colour information of images. The Average Precision/Recall rate of the system without colour information is 53.98%. The system proved to be better when the colour characteristics of the images are combined with the local features and the Average Precision/Recall rate was 80.56%. Further, the performance of system was also analyzed by giving multiple queries. The Average Precision/Recall rate of colour characteristics with multiple queries was 86.32%.

In the next approach, the Speeded Up Robust Features are used to retrieve images. The system was implemented to retrieve images without adding any features. The system was also implemented taking the colour feature of the images along with the SURF features. This method also proves to be better in image retrieval when the colour characteristics are taken. The Average Precision/Recall rate of the system without colour information is 71.67%. The system proved to be better when the colour characteristics of the images are combined with the local features and the Average Precision/Recall rate for single query retrieval was 90.37% and for multiple queries the Average Precision/Recall rate was 96.39%.

Final methodology was implemented using the Histogram of Oriented Gradients descriptor and Harris corners detector. The Average Precision/Recall rate of the system
without colour information is 84.07% and with colour characteristics for single query was 96.76% and 96.33% for multiple queries.

In future this research can be enhanced which requires minimal user-interaction, Further, the performance of the three methods could be analyzed with large collection of images.

The time complexity for matching the key features is found to be high. Therefore a faster method to reduce the time complexity of matching could be introduced. To bridge the semantic gap, the Bag-of-Visual-Word and Model-based representations could be used in the future work.
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