Ahmedabad University

ECE501- Digital Image Processing

Weekly Report 2

Section 1

Submitted to faculty: Prof. Mehul Raval

Topic: Content-Based Image Retrieval (CBIR)

Week Duration: 5th Oct - 11th Oct

Group no.: 6

Enrollment No.	Name	Name of the Program
AU2340030	Dhriti Gandhi	Btech: Computer Science And Engineering
AU2340041	Aneri Kabrawala	Btech: Computer Science And Engineering
AU2340059	Renee Vora	Btech: Computer Science And Engineering
AU2340082	Pushti Sonak	Btech: Computer Science And Engineering

2025-2026 (Monsoon Semester)

Objective

To design a **Content-Based Image Retrieval (CBIR)** system capable of retrieving visually similar images from a custom dataset using classical Digital Image Processing techniques such as colour histograms, texture analysis and edge detection, test and verify the results on images from the collected dataset, and retrieve meaningful data.

Input: a query image and a dataset

Output: a set of images from the dataset with a rank which are visually similar to the input image.

Work Done This Week

- Implemented the code for colour-based and edge-based feature extraction techniques for our Content-Based Image Retrieval system.
- Searched and collected appropriate datasets from Kaggle, to test and verify the code.
- Interpreted the results obtained from the code implementation on the animals and flowers images dataset.
- Working on the Mid-semester presentation and its report.

Next Week Plan

- We plan to implement, test and verify the code for texture-based feature extraction and all three feature fusion.
- Work out ways to bring more accuracy to the achieved results.
- Try implementing techniques to find images similar to the query image by similarity metrics using the Euclidean distance method.

Challenges Faced

- We constantly had to establish the environment by re-running or re-importing due to version conflicts with Scikit-image and NumPy libraries, as it produced import and Application Binary Interface errors.
- While reading and writing large chunks of images from Google Drive, input/output operations got slow because of path inconsistencies. This hampered the loading of the dataset and further extraction processes.

References

1. Kumar, R., & Murthy, N. M. S. (2025). Enhanced content-based image retrieval using integrated color and texture features. International Journal on Science and Technology (IJSAT), 16(1), 1–13.

2. Haridas, K., & Thanamani, A. S. (2014). Efficient content-based image retrieval system in visual words, color and edge directive descriptors and fuzzy color and texture histogram. International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE), 2(10), 6166–6175.