

# Image Search Engine

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**Abstract**—Image Search Systems lack the ability to exactly correlate with human perception, as words have limited ability to convey the exact concept and context. This leads to ambiguity in different contexts. An Image or picture is the best way to convey the concept in the right context. An Image in the concept that exhibits the information in a more relevant way. Its very arduous task to map the query word to retrieve the exact image as a relevant answer. Image search system mainly works on the principle on keyword as queries and likewise, work on surrounding information like tags annotation to find the relevant image. Search Engine development is challenging task that It maps keyword or image with the correct, relevant classification of the image. Visual attributes most of the times cannot be correlated exactly with relevant image class. The commercial search Engines like Google and Bing are using Image Search Systems.

**Keywords**—Feature Index, Histogram, Ranking, Euclidean Distance

## I. INTRODUCTION

Image Search Engine is information retrieval system, which will facilitate the process of finding the image. The focus of the image search is to retrieve the image with respect to user input query from the given large database. User may provide query such as keywords, image file or link and the system would return images similar to the input query image. The criteria used for search could be meta tags, colour distribution in images, region and shape attributes. Indexed meta-data of the image is stored in large database, when a query arrives and is performed, the search engine looks up the index and queries are matched with the information which is stored. The results of the search are sorted by relevancy.

## II. DEFINITION

We need to know how are we going to represent an image based on some features which can include color, texture, shape etc. Our feature index can be a single aspect or a combination of multiple aspects. Feature index is an object for comparison of the query and pre-processed images.

For this project, we consider using histogram as a feature index for our image search engine. Histograms are frequency plot of the intensity of the Red, Green and Blue color according to each pixel of the image. An assumption has been made that images having similar color distributions are similar to each other.

Now, the similarity between the query image and the pre-processed image is made using a distance metric. Most common choices for distance metric are Euclidean, Correlation, and Chi-Squared. In our project, we use Euclidean Distance as our distance metric.

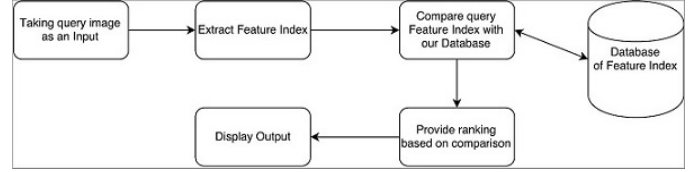


Fig. 1. Basic Framework

## III. PROCEDURE

The general procedure for a query image is as follows:

1. Creating feature index of all the pictures in the directory As mentioned above using histogram as a feature index, we generate histograms for all the images in our database and store the relevant details.
2. Taking the query image as an input from the user In this step, the user provides us the image for which the user wants to get semantically similar images.
3. Searching the directory for all the pictures Now, that the user has inputted the query image, we go ahead and match our query feature index with all the feature indexes of the directory.
4. Evaluating the same feature for the query picture As we need semantically similar images we calculate Euclidean distances between two feature Indexes (One from Query and One from Database) and we store them in a relevant file.
5. Ranking the pictures based on the extracted values After obtaining all the Euclidean distances, we now sort them into a relevant order and assign a rank based on the similarity of the images.
6. Outputting the matched pictures We output the matched images based on the rankings.

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