



# Hand-Crafted Object Recognition to Enhance the Features of Search Engine

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## Abstract:

The Content Based Image retrieval (CBIR) is a trending and exploring area that deals with image retrieval using visual feature extraction, multidimensional indexing, and retrieval system design. CBIR is a method for finding similar images from large image databases. Different approaches are used for Content based image retrieval, out of which Scale invariant feature transform is very popular. In this paper, we discuss the Content based image retrieval by Canny edge detector, SIFT (Scale-invariant feature transform), SURF (Speeded Up Robust Features). We propose information retrieval from Hand-Crafted diagrams by extracting features and best match finding, label marking.

**Keywords:** Image processing and Computer Vision, Edge and feature detection, Canny edge detection, SIFT (Scale-invariant feature transform), SURF (Speeded up Robust Features), Euclidean Distance.

## I. INTRODUCTION

Object Recognition techniques are useful in many image processing applications. Content-based image retrieval systems work with whole images and searching is based on comparison of the query. General techniques for image retrieval are color, texture and shape. These techniques are applied to get a matching image from the image database. Generally information retrieval from Google or any other search engine is text based wherein user have to enter their query in search engine in text format. In this paper we have proposed an application where based on a drawn image the user will be able to retrieve all related information. Some Image Processing algorithms applied will be canny edge detector, SIFT (Scale-invariant feature transform), SURF (Speeded Up Robust Features). This software will consist of an application where the user can draw diagrams for searching and a database for storing huge amount of datasets from which data will be retrieved. Several algorithms like canny edge detector, SIFT (Scale-invariant feature transform), SURF (Speeded up Robust Features) need to be applied on images to extract features from the images to map them with the user provided diagram. We are also using Euclidian Distance concept for best result matching and label marking from database and providing best result according to user query image.

## II. MOTIVATION

Generally information retrieval is done by query statement. Sometimes this confines the imagination of a user to only certain textual words. This limitation motivates us to design new and easy way of information retrieval using CBIR system. We proposed new way for searching information with hand crafted images and easy information retrieval.

## III. OBJECTIVE and SCOPE

1. To retrieve websites and images similar or related to the drawn image.
2. To help user draw a conceivable figure on the search engine

- to inspect the relation of the figure with a particular word.
3. to make searching comparatively simple even when the word to be searched is recondite.

## IV. EXISTING SYSTEM APPROACH

Generally searching on web is done by text query using various search engines. Even Google has provided us Reverse image search engine where user can upload an image for searching information related to that image. So the user has to type or upload a picture of whatever is to be searched. This limits the user's imagination as there can be a situation where he has something in his mind of which he does not know its name and thus he cannot describe that object in the query. This a limitation of the existing search engines because there is no provision to draw whatever is to be searched.

## V. DISADVANTAGE OF EXISTING SYSTEM

1. There is no system providing user defined diagram as input and then providing related output.
2. Time consuming as the user has to first draw an image on paper then scan it and finally upload it for searching.
3. Process is lengthy and user interaction is poor.

## VI. LITERATURE SURVEY

### A. "Content Based Image Retrieval using Query by Approximate Shape", Stanislaw Deniziak, Tomasz Michno

In this paper a different method of Content Based Image Retrieval is used. Here the database is queried using some approximate shapes representing the given image. This may lead to a point where all the images related to the input images even if irrelevant will be displayed. Shapes are specified as a set of geometric primitives and attributes. Relations between primitives are represented by a graph. The image provided as input is processed and some shape is

obtained from it which is then provided to the database for retrieval of the related images. But the shape obtained from one disadvantage of this method is that the Image Extraction is very poor and also the features extracted are not that accurate so as to make proper comparisons between the image and the database images.

**B."An integrated approach to Content Based Image Retrieval", Roshi Choudhary, Nikita Raina**

From this paper, we have referred a content based image retrieval integrated technique which extracts both the color and texture feature. To extract the color feature, color moment (CM) is used on color images which describe the distribution of all the colors in the image and to extract the texture feature, local binary pattern (LBP) is performed on the grayscale image. LBP technique helps to label the pixels by thresholding the neighbourhood of each pixel and considers the result as binary number. Then both color and texture feature of image are combined to form a single feature vector. In the end similarity matching is performed by Euclidian distance which compares feature vector of database images with query images

**VII. PROPOSED SYSTEM APPROACH**

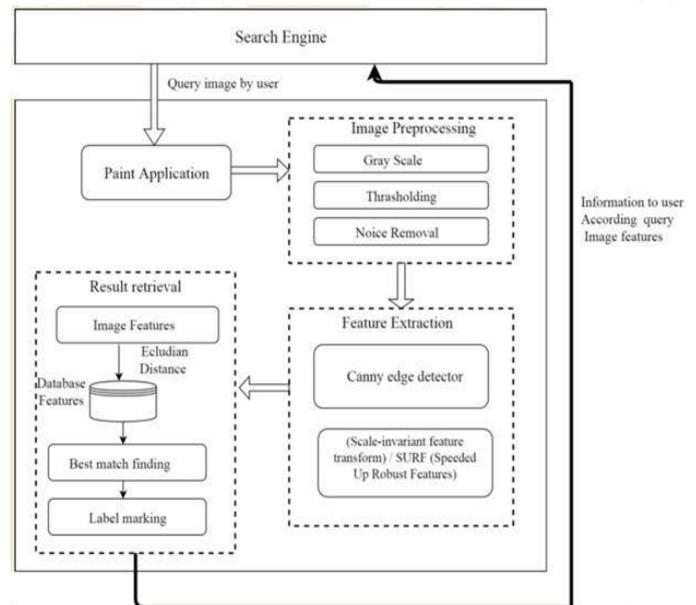
In this paper, we propose a system which will be an application where the user can draw diagrams which is to be searched and used as a query. A database will store huge amount of datasets, from which data will be retrieved. For retrieving contents related to the diagrams we need to work on Image Processing techniques. Several algorithms like Edge detection algorithm, Canny edge detector, SIFT (Scale-invariant feature transform), SURF (Speeded up Robust Features) need to be applied on images to extract information from the images to map them with the user provided diagram. The database we will be using will contain huge amount of datasets from which the search will be done for the diagram provided by the user. The platform to draw the diagram will be created by using Java Swing. Java Swing is a part of Java Foundation Classes (JFC) that is used to create window-based applications. The application where user will draw the diagram will be an offline application which will be activated when user chooses to search content by providing drawn image. The online platform for searching will be done using JSP. JSP (Java Server Pages) is used to build web application. JSP application is built using HTML and JSP tags. JSP is an advanced version of Servlet providing more functions and advantages over Servlet. JSP is easy to maintain, no need to recompile and redeploy application, less code in JSP than in Servlet. Java Swing can be easily implemented either by creating an object of the Swing class or by using inheritance. There are certain utilities that Swing provides us with an ease of code implementation.

**VIII. IMPLEMENTATION**

The user will be provided with a web based application containing two buttons. One for normal text search and other for draw and search. If the user wants to search for textual content then it will be done in a similar manner as any other text based search engine works, but if the user chooses to draw and search, he will be directed to offline application created by using Java Swing which will help the user to draw whatever he/she wants and after the diagram is completed the user will submit the diagram and all the relevant and related search results will be made available to the user. At the

backend, the feature extraction of the input image will be done using Image Processing techniques like Canny Edge Detection, SIFT, SURF. SIFT and SURF algorithms will be used in the system for image processing if needed and for further higher versions of the system. The image drawn by the user in the application is first converted into an image. Then that image has to go through feature extraction in which the features of the image will be extracted and it will be compared with features of all the images stored in the database using Euclidean distance formula. Therefore feature extraction of all the images stored in the database will be done prior itself. For feature extraction canny edge detection algorithm will be applied on the drawn image to fetch all the edges of that image which will help system to understand shape of the complete figure. Also features like number of edges, branches, joins will be retrieved which will give much better comparison results and hence will make the proposed system more accurate and help user get all details of the image. So after recognizing the drawn image a keyword of that object will be known and that will be redirected to search engine to get related websites and images. In the initial phase, the focus is on the basic Geometric figures, Alphabets and Number identification and its related search. The further versions will be powered with abilities wherein the system will be able to process an image along with some characters in it and also will be able to process and search contents of overlapping images.

**IX. PROPOSED SYSTEM ARCHITECTURE**



The aim is to store as much images as possible in the database so as to get perfect match of the query image and hence making the search more accurate and powerful. The proposed system will help save time which was earlier wasted to find the appropriate word for any unknown object. Here we will be able to directly draw our imagination onto the screen without worrying about the fact that we do not know the correct word for the image. The system will help us get that particular word and redirect it to the search engine.

**X. CONCLUSION**

Hence the proposed system will be able to retrieve all related information based on the image drawn by the user. Java Swing and JSP are used for the design and development

of the GUI and the platform to draw images. The backend image processing task will be done by image processing algorithms like Canny Edge Detection. Features like shape will be extracted from the image so as to compare them with the features of all the stored images and then the best match will be selected and the label of that image will be extracted and passed to the search engine. This will be the initial version of the system. The further versions will contain advanced image processing techniques wherein the user can also query high end and overlapping images.

## XI. REFERENCES

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