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# AN APPROACH TO ENHANCE EFFICIENCY OF WEB IMAGE SEARCHING

**Rasika Vinayak Khandre[1], N. A. Deshpande[2]**

[1] *PG Student, Computer, Computer Engineering, MCOERC, Nasik, Maharashtra, India*
[2] *Associate Professor, Computer Engineering, MCOERC, Nasik, Maharashtra, India*

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**Abstract -** ***Search engines are the primary source of information retrieval. Search engines are used to extract multimedia data from the web. While searching for text query, search engines suffer from the problem of ambiguities. For. e.g. if user is searching for keyword "jasmine" then there are various subcategories for jasmine like "Flower jasmine", "name of girl", "jasmine tea", "jasmine plant", and "jasmine hotel" etc. To overcome such type of ambiguities there is need to develop algorithm which will consider users search intention. In this paper we have considered two approaches to minimize human efforts and generate best possible match as result. System uses various types of descriptors to improve efficiency of retrieval.***

***Key Words:*** *Visual Features, Semantic Signature, QSVSS etc.*

## 1. INTRODUCTION

Search engines are used worldwide to extract information related to any topic at any time. But there is major of ambiguities while searching with text query. To overcome the ambiguities proposed a technique which will focuses on users search intention. The aim of the system is to design an efficient technique to easily extract images as per users search intention, to handle problem of ambiguity and to provide best result over huge data set.

Image re-ranking [1] [2] [3] improves the result of web based image search. Image Re-ranking is the process of which reorganizes the result by considering different features of image. For a given query keyword, search engine re-ranks the cluster of images based on the query. In conventional re-ranking framework user is promoted to select query image from a group of images ranking is performed on the user selected image.

In recent years ranking is performed on One-click feedback [3] [4] method that is used to improve search results. This approach has been adopted by main web image search engines.

## 2. SYSTEM ARCHITECTURE

System architecture describes the entire flow of designed system. It is divided into two parts.

- Offline Part
- Online Part

### 2.1 Offline Part

This part is responsible for:

1. **Accept data set as input:**

In offline part we are working on standard data set, therefore accept any one type of category from data set.
For Eg. Select category as Jasmine. This category may have number of subcategories.

2. **Reference Class Formation:**

To extract subcategories or reference classes this step is used. It will generate output as Jasmine flower, jasmine hotel, Jasmine princess etc. for above selected main category.

3. **Mapping of Reference Classes and Images:**

Here all images of standard data set and reference classes formed are mapped with each other.

4. **Visual Feature Extraction:**

Extraction of Visual features which will help to find best match for users query.[8][14]

5. **Store Reference Classes and Visual Features in Database:**

To reduce computational time of searching all processed data is stored into database.

### 2.2 Online Part

Actual user interaction is performed in this part. In this pat user can specify query in two different ways:

- Keyword as Query
- Image as Query

### 2.2.1 Keyword as query

It can have two alternatives:

- Keyword is preprocessed and available in database.
- New keyword which requires online training.

1. **Keyword is preprocessed and available in database:**
   If keyword is found in database then it will take less computational time to generate final rerank output. In this case only features of selected query image have to be extracted.[3]
2. **New keyword which requires online training:**
   If keyword is not found in database then there is need to update dynamically. For dynamic update sample set of images are extracted from search engine and whole process of offline part is applied on that sample set. Comparatively this type of query required more computational time.

### 2.2.2 Image as query

In this part user can upload his/her query image for searching. Features of query image are extracted and matching is performed with stored features to generate final rerank output.[3]

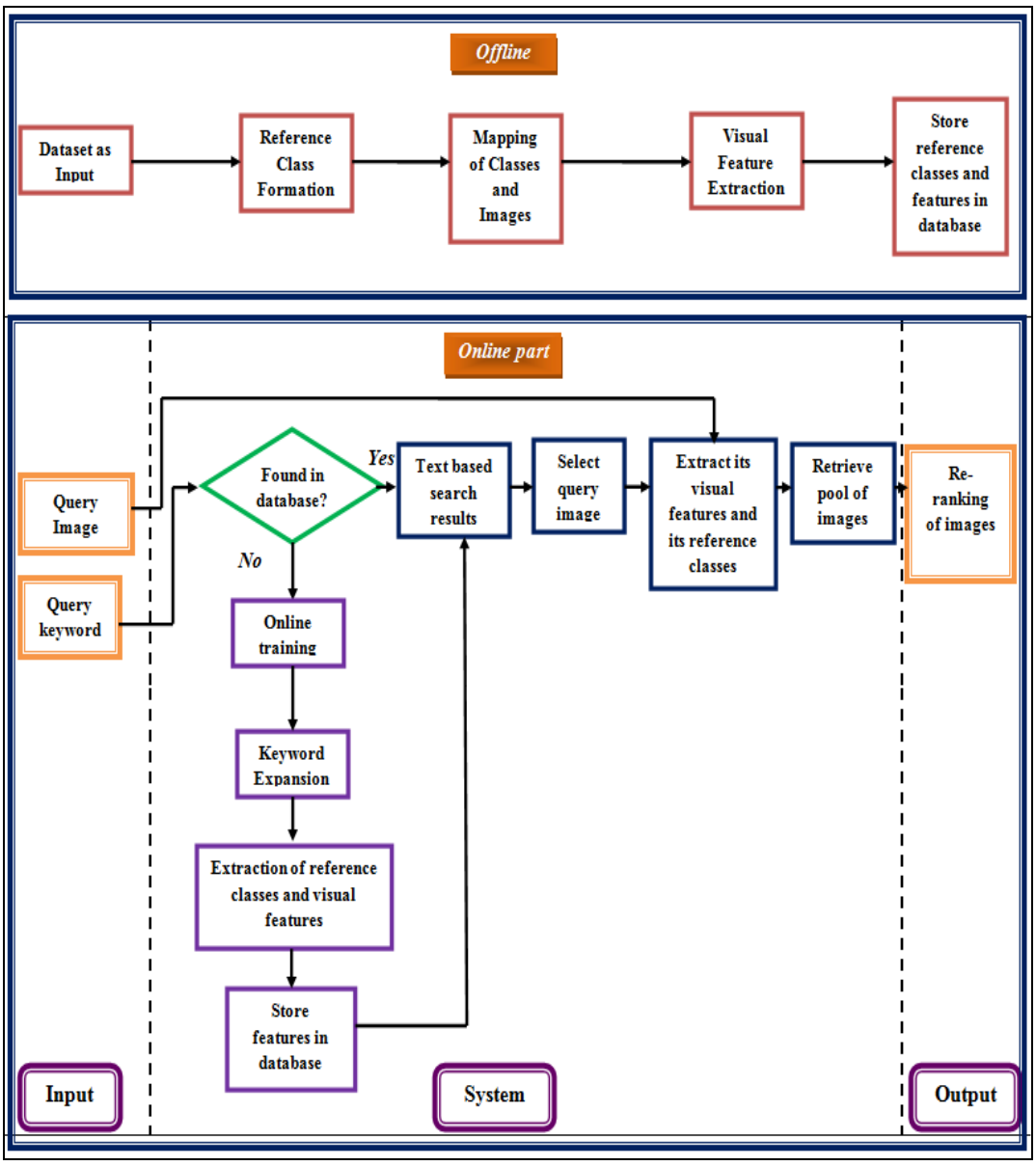


**Fig-3:** System Architecture

## 3. EXPERIMENTAL RESULT

In the field of computer science, constructed product result analysis is a static analysis that determines which functions in a given program can return multiple results in an efficient manner. The results of implemented system and the analysis of those results with the help of graphs.

### 3.1 Comparison of search by image and keyword

Major part of our system is search by image which was not implemented in existing system. Thus third experiment was conducted to compare efficiency of search by keyword and search by image. Comparative analysis is performed by calculating precision value of search by keyword and search by image. In search by keyword user have to select query image, that same image was considered for search by image for comparison. Fig. 2 shows Comparison of search by image and keyword. Table 1 shows the precision values for various descriptors.

**Table-1**: Precision values for various descriptors.

| Category : Apple computer | | |
|---|---|---|
| | Search by Keyword | Search by Image |
| Histogram | 0.83 | 0.91 |
| EHD | 0.9 | 0.86 |
| CLD | 0.9 | 0.9 |
| SCD | 0.87 | 0.81 |
| CEDD | 0.807 | 0.87 |
| FLTH | 0.73 | 0.8 |
| Fusion | 0.96 | 0.9 |

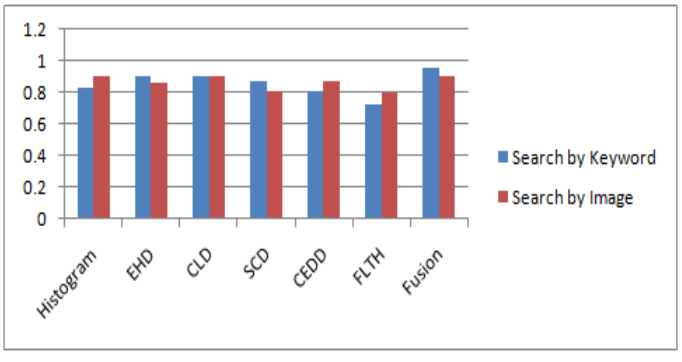


**Fig -2**: Comparison of search by image and keyword

### 3.2 Comparison on improvement of Average top 10 precision of all categories and existing results

In this experiment we have considered all 10 categories given in Bing Rerank Dataset III. Results are compared by calculating precision value of all 10 main categories and their subcategories. Results of this system are compared with results of existing system. Fig.3 shows graphical representation of comparison.

**Table-2**: Comparison on improvement of Average top 10 precision of all categories and existing results

| | Proposed | Existing |
|---|---|---|
| apple | 9.5 | 8.8 |
| ball | 9.1 | 3.9 |
| bell | 9.7 | 5.8 |
| cougar | 9.6 | 2.7 |
| jasmine | 9 | 5.7 |
| lincoln | 8.8 | 5.3 |
| mouse | 8.7 | 6.2 |
| paris | 9.9 | 12 |
| peach | 9.3 | 6 |
| rice | 9.1 | 6.3 |

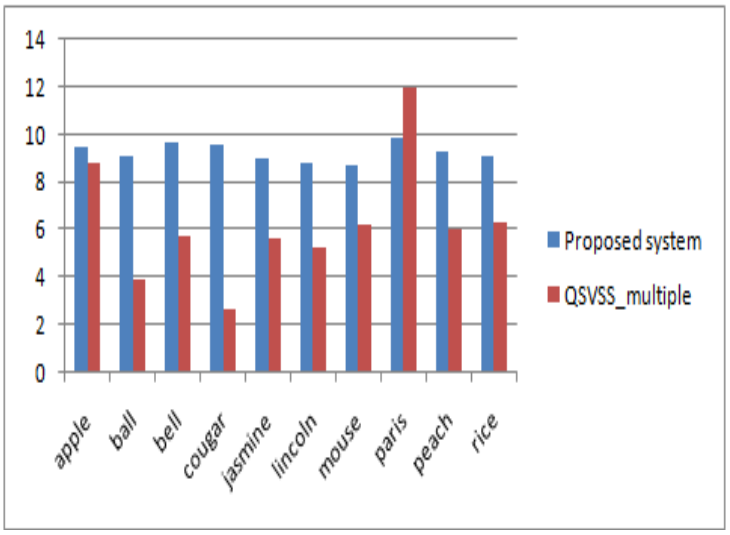


**Fig-3**: Comparison on improvement of Average to 10 precision of all categories and existing results

## CONCLUSION

This system reveals the hidden solution to the major challenge in web image searching. The system consists of two novel approaches one is searching with query image and dynamic updates of database which will help for faster retrieval of images. Database will dynamically updated by considering some sample images related to query keyword from search engine. By using concept of re-ranking and semantic signatures we can enhance the performance of searching. Also using proposed system we can perform searching without specifying query keyword.

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