images (Nr) over the total number of relevant images available in the database (Nt) [4] .

$$Pr = \frac{Nr}{K} \quad 1$$

$$Re = \frac{Nr}{Nt} \quad 2$$

1.4 Duplicate Image Detection

World Wide Web contains billions of images. User browsing the internet will quickly encounter duplicate images in multiple locations. Duplicate image detection is done for reducing storage space, understanding behavior and interest of user and for copyrights. Duplicates can be exact duplicates, global duplicates or near duplicates. Exact duplicate images have exactly the same appearance that is images with identical contents. The small alterations in the content of image are ignored in global duplicates. Near duplicate allows rotation, cropping, transforming, adding, deleting and altering image content [14]. In traditional duplicate image detection system, images are first converted into a particular image representation and then stored in indexing structure. When query image is received, system uses the indexing structure and similarities are computed by assigning score to each candidate image based on query image. Then certain threshold is applied to determine which of the candidate image are truly duplicates of the query image.

2. Existing Work

[14] Proposed a two step approach which combines local and global features. Seed clusters are discovered based on global descriptors with high precision and local descriptors used to grow the seeds to improve recall. Efficient hashing technique and MapReduce framework is used for duplicate image discovery. Navdav B.-Haim et.al.[15] Proposed ReSPEC (Re-ranking Set of Pictures by Exploiting Consistency) approach, combination of two methods. First step of algorithm retrieves the results by keyword query from an existing image search engine. In second step based on extracted image features, query results are clustered, which are most relevant to search query. In order of relevance remaining results are reranked. Image is segmented in blobs and features are extracted and clustered using mean Shift algorithm. Feature extraction is limited to color only, additional features would be necessary to handle more challenging problems. Li chen et. Al. [16] Proposed attention based similarity measure, which extracts colors and texture based signatures to compare near duplicate images. In pair of images similarity is determined by amount of matching structures detected. Color histogram intersection and Gabor based signature matching used to compare the proposed method. Ondrej chum et.al. [17] proposed two image similarity measures, which perform fast indexing based on locality sensitive hashing. Proposed approach uses a visual vocabulary of vector quantized local feature descriptors (SIFT) and min-Hash techniques for retrieval.

3. Research Framework

Proposed algorithm is fast and effective online image search algorithm based on one query image that capture user's search intention. This approach requires user to provide only one query image and images from a pool retrieved by text-based search are re-ranked based on their visual and textual similarities to the query image . The proposed method uses visual vocabulary of vector quantized local feature descriptor (SIFT) to find similarity measures to evaluate near duplicate image detection. Using this duplicate detection technique with existing Internet search system improves precision of top ranked images as result demonstrates.

3.1 Adaptive Similarity

A set of visual feature is designed to describe different aspects of image. The Adaptive Similarity is introduced with idea that a user always has precise intention when submitting a query image. For instance, a picture with a big face in the middle most is submitted by the user, most likely user requires images with similar faces and using face-related features is more appropriate. If scenery image is submitted, using scene related feature is more appropriate. The query image is first categorized into one of the predefined adaptive weight categories. There are five types of categories as general object, object with simple background, people, portrait and scene. Under every category, a specific pre-trained weight schema is used to combine visual features adapting to this kind of images to improved re-rank the text-based search result.

3.2 Keyword Expansion

User entered query keywords tend to be short and some significant words may be missed because of users' lack of knowledge on the textual description of target images. To capture users' search intention query keywords are expanded, inferred from the visual content of query images, which are not considered in traditional approaches. A word w is recommended as an expansion of the query if a cluster of images are visually similar to the query image and all contain the same word w. With help of visual content and textual description expanded keywords better capture user intention

3.3 Image Pool Expansion

Reranking images in the pool retrieved by text-based search is not very effective because image pool accommodates images with a large variety of semantic meanings and the number of images related to the query image is small. Thus, query by keywords should be more accurate which narrow the intention and retrieve more relevant images. Keyword expansions using both visual and textual information retrieve relevant images, which are added into the text query and enlarge the image pool automatically.

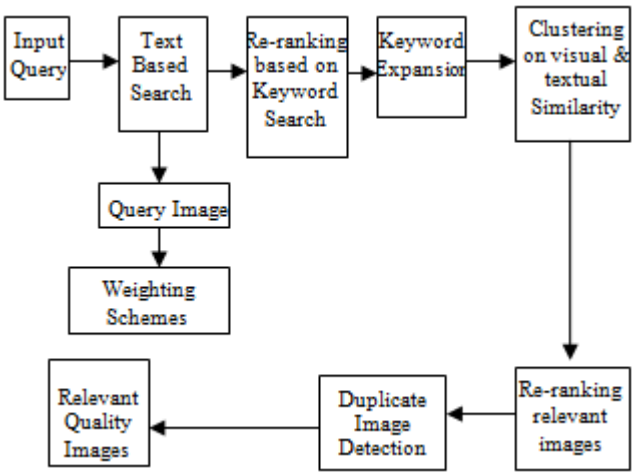

Figure 3: Proposed System Architecture.

3.4 Visual Query Expansion

To capture search intention one query image is not enough. In keyword expansion step, a cluster of images visually similar to query image are found, which are used as multiple positive image examples from which textual and visual similarity metrics is obtained. These metrics used for image reranking, because they are more specific and robust to the query image.

3.5 Duplicate Image Detection

The similarity measures are applied and evaluated in the context of near duplicate image detection. The proposed method uses a visual vocabulary of vector quantized local feature. For duplicate image detection, first images are matched using distinctive invariant features. These features are extracted from set of reference images using Scale Invariant Feature Transform (SIFT) algorithm and stored in database. A new image is matched by comparing each feature of new image to this previous database. Then certain threshold is applied to determine which of the candied images duplicates of query image are.

4. Conclusions

This survey provides an overview on the functionality of content based image retrieval system. Most systems are based on low level features such as color and texture, few systems uses shape and spatial location features. Semantic gap can be reduced using various techniques as, object ontology, machine learning methods and relevance feedback. Image search is a process of retrieving and displaying relevant images based on user query. Image search result consist of duplicate images, duplicate can be exact duplicate, global duplicate or near duplicate. The proposed system contains five steps to retrieve relevant images as per user intention. To combine visual feature and to compute visual similarity adaptive to query image an intention specific weight schema is used. To capture user's search intention visual and textual expansions are integrated without additional human feedback. Image pool is enlarged using expanded keywords, to include more relevant images. One short come of the Intent search system is improved using duplicate image detection. To further improve the quality of re-ranked images, this work can be combined with photo quality assessment framework to rerank images by visual quality of the image.

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