

Review on the Efficiency of Face Image Retrieval

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ABSTRACT

In this paper we have reviewed and analyzed different retrieval techniques. This is based on Image processing. Different techniques are available for image retrieval. In Social networking and photo sharing photos are shared vastly. Photos are with friends, family can be shared using digital devices. The popularity of social networks like face book, twitter are mostly used by the people. Many of users use human face images to their profile. As largely growing databases of social networking retrieval becomes difficult. We have reviewed sparse codewords technique which is applied to large dataset. By doing so to analyze the effectiveness and efficiency of different human attributes across datasets and find instructive human attributes. Using sparse codewords it is possible to detect human attributes. The possible remedies for improving image retrieval is apply to large datasets.

INTRODUCTION:

Day by day the popularity digital devices and their applications are increasing widely. By using social networks photo sharing, photos uploading is done fast. Image retrieval method do photo sharing applications. Most of the images are generated in digital form around the world, image retrieval attracts attention among researchers in the fields of image processing, multimedia, digital libraries, Effective and fast retrieval of digital images is not an easy task, especially when the collections grow into thousands. A valuable image retrieval system desires to operate the system of image retrieval on the collection of images. Images can be retrieve the relevant images based on the query image which is closely possible to human features. "Content-based" retrieval means that the search analyses the contents of the image. Metadata such as keywords, tags, or descriptions associated with the image can be used for search methods. Content of image might refer to colours, shapes, textures, or any other information that can be derived from the image itself. Content based image retrieval these systems based on categorizing images in semantic classes like "cat" as a subclass of "animal" this system can avoid the miscategorization problem. But this system will require more attempts by a user. Using existing technology textual information about images can be easily searched, but this requires humans to manually illustrate each image in the database with features. This can be impractical and difficult for very large databases or

for images that are generated automatically. Images with different synonyms can miss their descriptions.

1. RELATED WORK:

A. INVERTED FILES FOR TEXT SEARCH ENGINES

Search engines are tools. These tools are used for finding the documents in a collection that good quality matches to user queries. Document collection includes Web pages, newspaper articles, academic publications, company reports, research grant applications. Search engines having structure similar to database systems. Documents are stored in a repository system. Index is maintained on that repository. Queries are evaluated by processing the index to identify matches which are then returned to the user. However, there are also many differences. Database systems must contend with arbitrarily complex queries, whereas the vast majority of queries to search engines are lists of terms and phrases. In a database system, a match is a record that meets a specified logical condition; in a search engine, a match is a document that is appropriate to the query according to statistical heuristics and may not even contain all of the query terms.

a) Indexing

Query evaluation can be fast makes use of an index. Data structure used to maps terms to the documents that contain terms. The index of a book maps a set of selected terms to page numbers. With an index, query processing is restricted to documents. Documents that contain at least one of the query terms. Fig 1. Shows the design of inverted file.

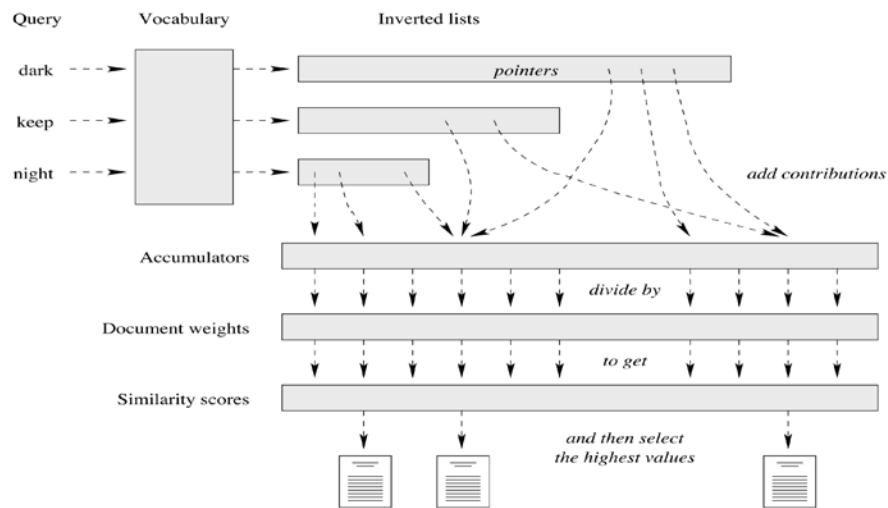


Figure 1: Design of inverted file

This transformation does not diminish the maximum magnitude of the stored numbers, this file reduce the average. It provides leverage for the compression techniques. In this technique, the query terms are processed one at a time. Initially each document has a similarity of zero to the query.

b) Phrase Querying Techniques

A small queries are given to Web search engines include an explicit phrase, such as "classic glass" opera or "the great moon". Phrases are entered by user without explicit quotes, issuing queries such as Albert Elley or San Frans hotel. Initially it is expected that high scores must be obtain to pages in which terms appear in the same order and pattern as they appear in the query, and low scores must be gain to pages in which the terms are separated. In Boolean queries phrases are used, it is clear that the phrase which is given as a query itself must exist in matching documents. For example, the Boolean query old "day keeper" would be evaluated in different ways. If this phrase contains two query terms, one of which is a phrase, and both terms must be present in a document to match .In document-level querying is required positional information in the index is included not only takes space, it also slows query processing.

1) Advantages-

Inverted index can be used for word, phrase matching.

2) Limitations-

Many words are common in phrase, it is time consuming process.

B. FACE RECOGNITION USING SPARSE REPRESENTATION

Automatically recognizing human faces from frontal views with varying expression and illumination this problem occur very often. Proposed technique based on a sparse representation, having a general classification algorithm which is for (image-based) object recognition. In face recognition method this framework provides new vision feature extraction and robustness to occlusion. Error handling can be done by this framework occur due to occlusion and corruption uniformly by exploiting the fact that these errors are often sparse with respect to the standard (pixel) basis. Sparse representation helps forecast how much occlusion the recognition algorithm can handle. The choice of the training images to maximize robustness to occlusion. Detector is used to find out the malicious behavior of a program. Most of times hackers use obfuscation to change the malwares. So, here the detectors use pattern-matching technique to search the obfuscations made by hackers.

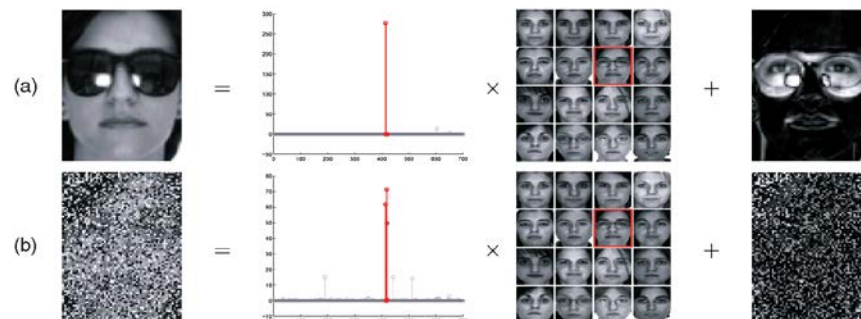


Figure 2: Face recognition using sparse representation

a) Using Sparse Representation For Classification

Sparse representation having discriminative nature to perform classification. Instead of using the generic dictionaries, test sample are represented in an over complete dictionary whose base elements are used as the training samples them. If training of samples are sufficient available from each class. Test samples are presented as linear combination. Representation obtain is naturally sparse. It involves only a small fraction of the overall training database. We fall out that in many problems of interest, it is actually the sparsest linear representation of the test sample in terms of this dictionary.

b) Feature Extraction Role

In feature extraction generally look invariance properties so that the results that are extracted do not vary according to chosen conditions. This technique implies finding objects, whatever their position, their orientation, or their size. This technique should find shapes reliably and robustly. The value of any parameter that can control the appearance of a shape is not changing. As a basic invariant immunity to changes in the illumination level: capable to find a shape whether it is light or dark. In principle, as long as there is contrast between a shape and its background, the shape can be said to exist and can then be detected. Occlusion poses a significant Obstacle to robust real-world face recognition. Difficulty occurs due to due to the unpredictable nature of the error incurred by occlusion. Occlusion can affect any part of the image and or it can affect to whole image. Error occurred by this error typically corrupts only a fraction of the image pixels and is therefore sparse representation is used in the standard basis given by individual pixels. With the help of sparse representation error can be handled uniformly within our framework: the basis in which the error is sparse can be treated as a special class of training samples.

1) Advantages-

It is used for handling error within framework. sampling of the specification space.

2) Limitation-

The proposed method is applicable to only small variations in pose.

C. LABELED FACES IN THE WILD

a) Database Technique

Labeled Faces in the wild this database contain variation in pose, lighting, expression, background, race, ethnicity, age, gender, clothing, hairstyles, camera quality, colour saturation, focus, and other parameters. LFW database contains 13,233 target face images. Some images can have more than one face, but image is selected which is

having central pixel of the image. Faces that does not satisfying the target face should be ignored as "background". Each face is having a unique name. The images are available as 250 by 250 pixel JPEG images. Most images present are in colour, few images are with gray scale only.

1) Advantage-

Use for faces in unconstrained conditions.

2) Limitations-

1. Algorithm should not use more than one pair for test.

2. It is not able to characterize the traffic of large amount of malwares.

b) Pair matching

Specific pair matching problem such as, in this test pair pictures are not seen. This is closely related to the problem of learning in learning problem single image is given; the goal is to determine whether a new image represents the individual for that image one training image was provided. Specifically in this method given a pair of images and the question of whether that images are the same. One of the images can be selected to define the "model", and the other image can be considered to be an instance of the person defined by the model or not.

1) Advantage-

It gives effective analysis even with large number of applications.

2) Limitation-

It is less effective at automatically detecting privacy leaks and malicious functionality in application

c) Training and Validation

Data is organized into two "Views", or groups of indices. View 1 is for algorithm development and general experimentation. This view also be called a model selection or validation view. View 2 this view is for performance reporting. View 2 should be used only at the time of the final evaluation of a method. The goal of this methodology is to use the final test sets as seldom as possible before reporting. Test sets are used by database. This test set is not publicly available to researchers. It is the best way to guarantee that algorithm developers do not illegally fit the parameters of their algorithms to the test data. It allows experimenter to choose the parameters of an algorithm that work best on a test set, or equivalently. It also allows the experimenter to choose the best algorithm for a given test set. Result of algorithm would produce on a sequestered test set. While we fully support this point of view, we have decided for practical reasons not to use a sequestered test set, but to include the test data in the public database.

1) Advantages-

1. Researchers can freely experiment with algorithms.
2. By using final test set as seldom.

2) Limitation-

It is critical for accurate performance reporting.

2. SCALABLE FACE IMAGE RETRIEVAL USING SPARSE CODEWORDS:

Bor-Chun Chen et al. [7] proposed Sparse codewords framework used to scalable face image retrieval. It does this by using different image retrieval techniques.

- Low level features: Low level features are used to represent faces but these features can lack of semantic meanings. Semantic meanings such as gender, hair, color. Low level features can be extracted automatically from an image. This features can be extracted without any shape information. Edge detection, corner detection which can be thought of as detecting those points where lines bend very sharply with high curvature different transformation categories such as repacking signed jar files, disassembling and reassembling the byte code, changing package name.
- High-level feature extraction it concerns with finding shapes and objects in computer images. Shapes can be

used for image retrieval. High level features such as eyes, nose, ear are used to face image retrieval methods. To find this features, we can use their shape for image detection as : the white part of the eyes is ellipsoidal; the mouth can appear as two lines, as do the eyebrows. This features can be viewed as objects. High level features are used to the low-level features to define collections of points which define the eyes, nose, and mouth, or even the whole face.

- By using feature extraction generally look invariance properties so that the results that are extracted does not vary according to chosen conditions. This technique implies finding objects, whatever their position, their orientation, or their size. This techniques should find shapes reliably and robustly. The value of any parameter that can control the appearance of a shape is not changing. As a basic invariant immunity to changes in the illumination level: capable to find a shape whether it is light or dark. In principle, as long as there is contrast between a shape and its background, the shape can be said to exist and can be detected analysis

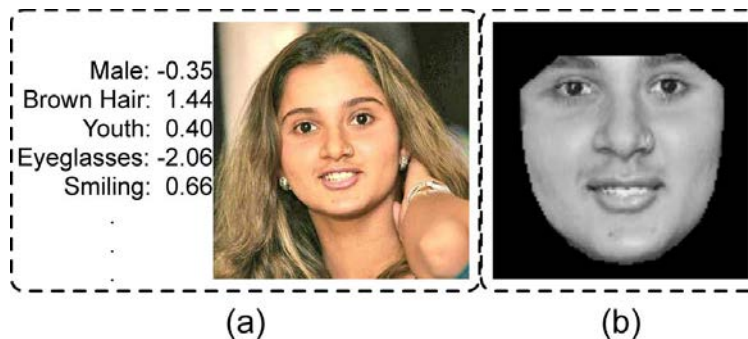


Figure 3: Face recognition through sparse codewords

Advantages-

1. Automatically detected human attributes utilized significantly.
2. Low level features are combined with detected human attributes.

3. IMPORTANCE:

The popularity of digital devices is increasing. To improve face image retrieval 'Sparse codewords' technique is used. It is used to apply for large datasets. It is applicable to dataset such as Pubfig and LFW dataset. These two dataset contain faces taken in unconstrained conditions.

4. CONCLUSION:

In this paper, we have analyzed different image retrieval techniques. Image retrieval using sparse codewords this technique is used for scalable image retrieval. This

method combines automatically detected human attributes with low level features. Human attributes such as lips, eyes, and nose detected automatically. Scalable framework is maintained

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