AESC Technique For Scalable Face Image Retrieval.

Priyanka Shinkar[1], Rekha Ghayal[2], Pradnya Ingale[3], Parin Gaikwad[4]

[1,2,3,4]Student Department of Computer Engineering, Pune University, India
Sir Visvesvaraya Institute of Technology, Sinner, Maharashtra, India.

***Abstract*— Now a day's photos with people are major interest of users. Thus, large scale content-based face image retrieval is an enabling technology. In this work, we aim to utilize automatically detected human face attributes that contains semantic cues of the face photos, it improve content based face retrieval by constructing semantic code words for efficient large scale face retrieval. Mainly we propose two methods named Attribute-Enhanced Sparse Coding and Attribute Embedded Inverted Indexing. These two methods will improve the face retrieval in the online and offline stages.**

***Keywords*—** Face image, human attributes, content-based image retrieval, Attribute enhanced sparse codeword's, attribute embedded inverted indexing..

I. INTRODUCTION

Our goal in this paper is to find similar face images from large scale image database. In this work, we use High-Level features to represent face. We propose and combine two methods Attribute-Enhanced Sparse Coding and Attribute Embedded Inverted Indexing to improve the face retrieval from large scale database. System is useful for many applications such as Crime investigation, Automatic Face Annotation etc.

II. EXISTING SYSTEM

For retrieving images from large scale image database different retrieving techniques has been used. Existing system implements low-level features for image retrieval.

Traditional methods for face image retrieval usually use low-level features to represent faces but low-level features are lack of semantic meanings and face images usually have high intra-class variance (e.g., expression, posing), so the retrieval results are unsatisfactory as shown in Figure 1. For example existing system retrieves images even if two people of different gender but are having similar facial appearance. This result of existing system is unsatisfactory [1].

Fig 1: Image retrieval using low-level features

Because low-level features are lack of semantic meanings, face images of two different people might be close in the traditional low-level feature space. In Existing systems strong, face-specific geometric constraints among different visual words in a face image are ignored. Various discriminative facial features have been proposed in recent works on face recognition. However, these features are typically high-dimensional and global. Thus they are not suitable for quantization and inverted indexing.

III. HIERARCHY OF IMAGE RETRIEVAL

Below Fig 2 shows the various Retrieval techniques with their advantages and disadvantages. In existing system many problems are detected. According to existing system low-level feature are used for face image retrieval which gives unsatisfactory result [1].

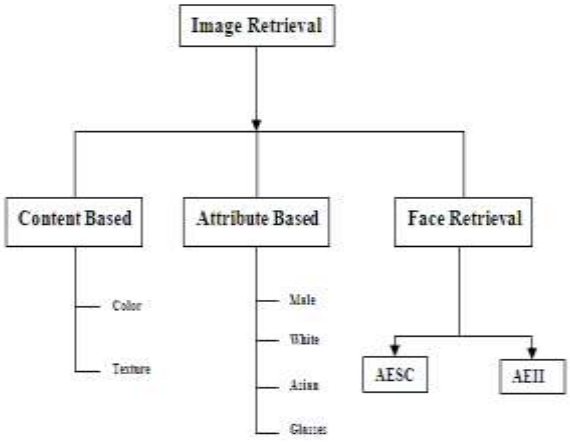

Fig 2: Hierarchy of Image Retrieval

IV. PROPOSED SYSTEM

We propose two orthogonal methods named attribute-enhanced sparse coding and attribute-embedded inverted indexing. AESC exploits the global structure of feature space and uses several important human attributes combined with low-level features to construct semantic code words in the offline stage. On the other hand, AEII locally considers human attributes of the designated query image in a binary signature and provides efficient retrieval in the online stage.

Retrieval Techniques:

1) Content-based image search
2) Attribute based search
3) Face Image Retrieval

A. Content-based image search:

The technique of Image retrieval according to image content is called Content-Based Image Search. CBIR uses visual contents of image. Such visual contents of image are use to search images from large scale image database according to user's interests.

Content Based Image Retrieval techniques use image content like color, texture and gradient to represent images to deal with large scale data. Fig 3 shows Content-Based Image retrieval.

Content-based image retrieval (CBIR), also known as query by image content (QBIC) and content-based visual information retrieval (CBVIR) is the application of computer vision techniques to the image retrieval problem, that is, the problem of searching for digital images in large databases.

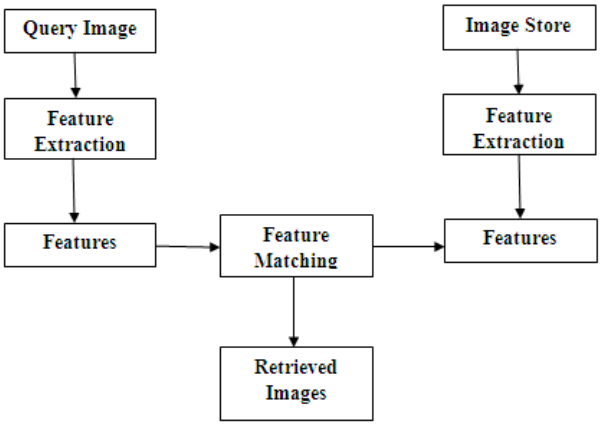

Fig3: Content-Based Image retrieval

B. Attribute based search:

Attribute detection has adequate quality on many different human attributes. Using Attribute Based Search, many researchers have achieved promising results in different applications such as Face Identification System.

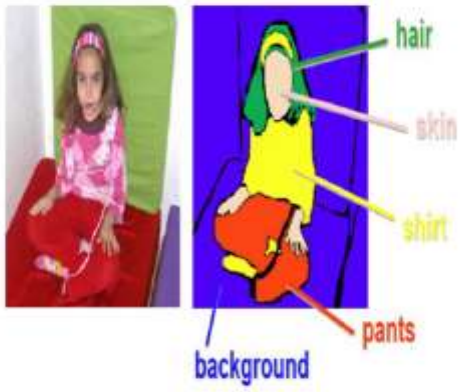

Fig 4: Attribute-Based Image retrieval

Human attributes are high-level semantic descriptions about a person. Some examples of human attributes can be found in Fig 4. The recent work shows automatic attribute detection has adequate quality (more than 80% accuracy) on many different human attributes.

C.Face Image Retrieval:

A facial image retrieval model has been proposed for problem of similar facial images searching and retrieval in the search space of the facial images. This can be done by integrating content-based image retrieval (CBIR) techniques and face recognition techniques, with the semantic description

of the facial image. The aim of the proposed system is to reduce the semantic gap between high level query requirement and low level facial features of the human face image such that the system can be ready to meet human nature way and needs in description and retrieval of facial image.

In this mainly two new techniques are used to retrieve image from large scale database.

1] Attribute enhanced sparse coding (AESC)

2] Attribute embedded inverted indexing (AEII)

1] Attribute enhanced sparse coding (AESC):

AESC describes the automatic detection of human attribute from the image and also creates the different sparse coding. The collections of sparse codeword represent the original image.

2] Attribute embedded inverted indexing (AEII):

AEII collects the sparse code words from the attribute enhanced sparse coding and check the code words with the online feature database. Then it retrieve the related images similar the query image. Fig 5 Shows Image retrieval using High-level features

In this we can automatically detect the human attributes using two orthogonal methods: 1) Attribute-enhanced sparse coding 2) Attribute embedded inverted indexing. AESC exploits the global structure of feature space and uses several important human attributes combined with low-level features to construct semantic codeword in the offline stage.

AEII (Attribute-Embedded Inverted Indexing) locally considers human attributes of the designated query image in a binary signature and provides efficient retrieval in the online stage. We combine the low level features and high level human attributes to construct the sparse coding. Using the automatically detected human attributes we can achieve excellent performance in keyword based image retrieval.

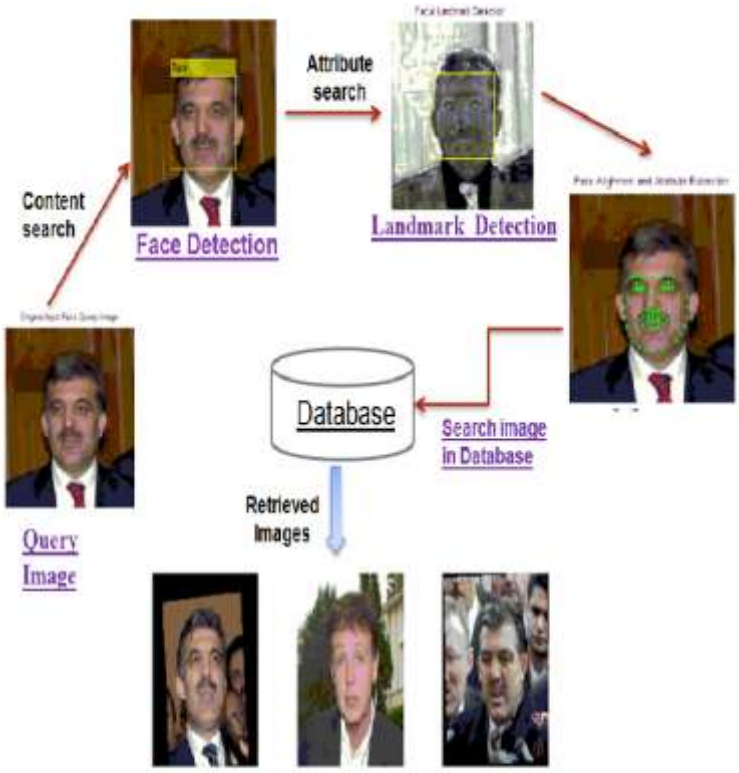

Fig5: Image retrieval using High-level features

The LBP (Local Binary Pattern) is used to segment the image into many parts. But it use textual descriptions the segmented image are assigned as 1s and 0s. Then we can retrieve the list of image from the large scale image database.

V. ARCHITECTURAL DESIGN:

Fig 6 describes the architecture of our system [3]. Face image database contains all the trained face images. The input query images goes through the processing where query image goes through the face detection process.

Now the codeword's are assigned to the input query image and will be stored in the trained face image database. Now the assigned codeword is searched in the database and all the relative images are retrieved from the database.

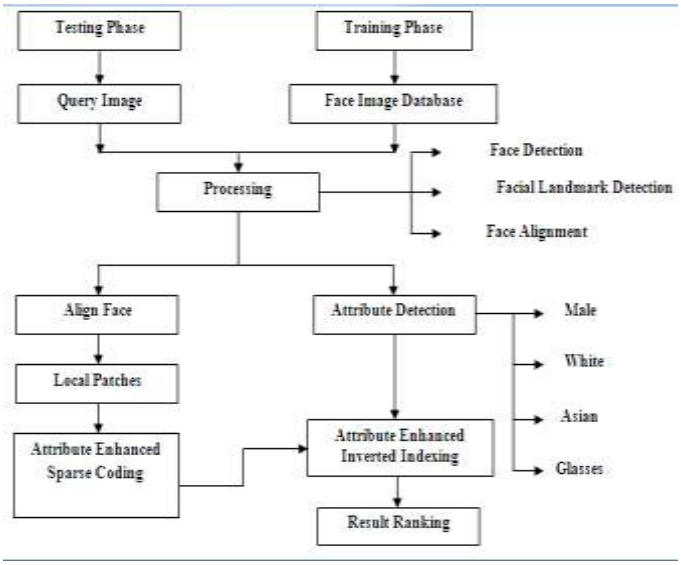

Fig 6: System Architecture

VI. RELATED WORK

System consists of following modules.

A. Face Retrieval from Image:

First module plays an important role in face retrieval from large scale database. In first module face detection is done with the help of content of image. In this technique input image is given to the system then background is removed from image for proper detection of face.

Fig7: Face Retrieval from query image

Whenever query image is given as input to the system the image then formatted without the background image. Only facial position of the image is separated from query image. Following Fig 7 shows the face retrieval from input image.

B. Patch Generation And Codeword Assignment:

In this module patch generation is done using Attribute Enhanced Sparse Coding (AESC). Attribute Enhanced Sparse Coding is the technique which describes the automatic detection of human attribute from the query image. Then it creates the different sparse coding. These code words are created in the offline storage. These collections of sparse coding represent the original image [2]. Fig (8) clearly describes the patch generation & Codeword assignment.

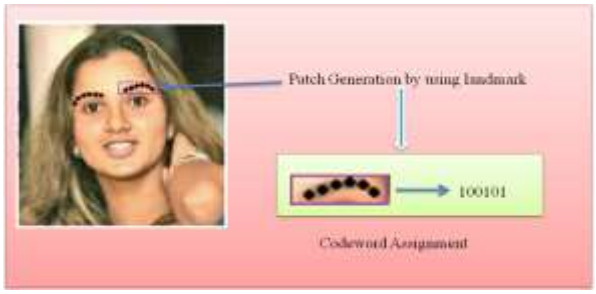

Fig8: Patch Generation & Codeword Assignment

C. Image Retrieval Using AEII :

In this phase actual image extraction is done from large scale database. It introduces new technique named as Attribute Enhances Inverted Indexing (AEII). It provides efficient retrieval in the online stage. In this phase the sparse codeword's are compared with the online codeword's and gives the list of similar images to the query image [2].

VII RESULT ANALYESIS:

Fig 9: Query Image & Face Detection

Fig 10: Trained Face

RESULT

Fig 11: Similar Facial Images from database

Query image is given to the system which is considered as input Image as shown in Figure 9. After that face detection is done with the help of CBIR & ABIR. These two techniques mainly used to obtain trained faces as shown in Figure 8. Then using AESC & AEII image retrieval is done from large scale database.

VIII. CONCLUSION:

In our proposed system we can get the high performance on the image retrieval in large scale image database. In the existing system we cannot use the human attributes only use the low level features of the human images. But in the proposed system we use the high level attribute. Attribute enhanced sparse codeword's retrieve less number of images due to that we can get only the related images. From that we can obtain the main image from the large image database.

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