**Assignment No: 3**

**Problem Statement:** Domain Specific Analysis.

**Domain: Image Processing**

**Introduction:**

**Computer Imaging:**

It can be defined a acquisition and processing of visual information by

computer. Computer representation of an image requires the equivalent of

many thousands of words of data, so the massive amount of data required for

image is a primary reason for the development of many sub areas with field

of computer imaging, such as image compression and segmentation .Another

important aspect of computer imaging involves the ultimate “receiver” of

visual information in some case the human visual system and in some cases

the human visual system and in others the computer itself.

Computer imaging can be separate into two primary categories:

1. Computer Vision

2. Image Processing.

(In computer vision application the processed images output for use by a

computer, whereas in image processing applications the output images are

for human consumption).

These two categories are not totally separate and distinct. The boundaries

that separate the two are fuzzy, but this definition allows us to explore the

differences between the two and to explore the difference between the two

and to understand how they fit.

Historically, the field of image processing grew from electrical

engineering as an extension of the signal processing branch, whereas are the

computer science discipline was largely responsible for developments in

computer vision.

**Image Processing:**

Image processing is computer imaging where application involves a human

being in the visual loop. In other words the image are to be examined and a

acted upon by people.

The major topics within the field of image processing include:

1. Image restoration.

2. Image enhancement.

3. Image compression.

**Image Restoration:**

Is the process of taking an image with some known, or estimate degradation, and restoring it to its original appearance. Image restoration is

often used in the field of photography or publishing where an image was

somehow degraded but needs to be improved before it can be printed.

**Image Enhancement**:

Enhancement methods tend to be problem specific. For example, a method that is used to enhance satellite images may not suitable for enhancing medical images. Although enhancement and restoration are similar in aim, to make an image look better. They differ in how they approach the problem. Restoration method attempttomodel the distortion to the image and reverse the degradation, where enhancement methods use knowledge of the human visual systems responses to improve an image visually.

**Image Compression:**

Involves reducing the typically massive amount of data needed to represent an image. This done by eliminating data that are visually unnecessary and by taking advantage of the redundancy that is inherent in most images. Image processing systems are used in many and various types of environments, such as:

1. Medical community

2. Computer – Aided Design

3. Virtual Reality

4. Image Processing.

**Short Description Of Project:**

The need to find a desired face from a collection is shared by many professional groups, including journalists, design engineers and art historians. While the requirements of image users can vary considerably, it can be useful to characterize image queries into three levels of abstraction: *primitive*features such as shape, *logical*features such as the identity of objects shown and *abstract* attributes such as the significance of the scenes depicted. While systems currently operate effectively only at the lowest of these levels, most users demand higher levels of retrieval.

In this work, we aim to utilize automatically detected human attributes that contain semantic cues of the face photos to improve content based face retrieval by constructing semantic code words for efficient large-scale face retrieval. By leveraging human attributes in a scalable and systematic framework, we propose two orthogonal methods named attribute-enhanced sparse coding and attribute embedded inverted indexing to improve the face retrieval in the offline and online stages. We investigate the effectiveness of different attributes and vital factors essential for face retrieval. Experimenting on two public datasets, the results show that the proposed methods can achieve up to 43.5% relative improvement in MAP compared to the existing methods.

**Objective**

This general objective can be broken down to five more specific objectives that would together achieve the overall goal of the project as follows:

1. To Study and Design Content Based Face Retrieval Server Architecture
2. Face Detection using HAAR CASCADE
3. Face Feature Extraction using Texture and Shape Based Algorithm
4. Feature Comparison using  **Euclidean distance** or **Euclidean metric**
5. Query Face Image Processing
6. GUI Interface