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Human Activity Detection Using RGBD

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Abstract: ***In Human Activity Detection Using RGBD we are detecting skin cancer, and the technique we using is content based image retrieval (CBIR) technique. In our research, we are retrieving similar images from the database based on colors. We are also finding similarity in percentage, between query image, and the images retrieved from database. Image distance measure compares the similarity of two images.***

Keywords: CBIR, RGB, Melanoma, JAI.

I. INTRODUCTION

As digital images bring impressive moments to our daily life, there is an ever-increasing need to ensure effectively retrieve multimedia content in a wide range of environment. The massive volume of images has challenging many great researchers to investigate on the feasible methods for content-based image retrieval applications; such applications could be used in commerce, medicine, education, and crime prevention.

The conventional image database search based on semantic annotation or keywords, editing keywords or labelling images are time-consuming tasks, and sometimes semantic views are normally different for each user. Content Based Image Retrieval (CBIR), aims to solve those problems by representing images with feature vectors (color, texture, shape) in the database, those feature vectors are extracted from images without human intervention.

CBIR image retrieval system presented in this paper is called GEO SPATIAL IMAGE RETREIVAL SYSTEM. This system consists of three main phase:

1) Features extraction

2) Retrieving methods, and

3) Ranking results and present images.

The feature extraction is the essential process of a CBIR system. First, the CBIR retrieval system selects appropriate feature spaces and explores various visual features to represent an image.

Second, based on the selected features, the images are represented by feature vectors. A retrieval system searches the nearest neighbor in the feature space by weighting different feature vectors and computing a similarity measurement for these feature vectors. The special measuring algorithms are designed to search the 'most similar' image from a database.

To date, image and video storage and retrieval systems have typically relied on human supplied textual annotations to enable indexing and searches. The text-based indexes for large image and video archives are time consuming to create. They necessitate that each image and video scene is analyzed manually by a domain expert so the contents can be described textually. The language-based descriptions, however, can never capture the visual content sufficiently. In addition, a language mismatch can occur when the user and the domain expert use different languages or phrases. Because text-based matching provides only

hit-or-miss type searching, when the user does not specify the right keywords, the desired images are unreachable without examining the entire collection.

The problems with text-based access to images have prompted increasing interest in the development of image based solutions. This is more often referred to as Human activity detection using RGBD type of the image or image attributed being sought. This system then identifies those stored images with a high degree of similarity to the requested feature.

Scope

Human activity detection using RGBD System is used to retrieve images which are similar to a particular query image given as an input. This system will then extract the colors of each image present in the database (jpeg/jpg only) and calculate the distance between the query image and other database images to find the similarity. All the image processing and interpolation will be done using JAI (java advanced imaging) API. Moreover, the database images being searched are collected from the parent directory of the image. Moreover, in future we can also search the similar images not only based on color content but also the shape, texture and other feature vectors to get better accuracy.

II. RELATED WORK

Ashis Kumar Dhara et al. [1] We have designed a content-based image retrieval (CBIR) system using chest CT images for differential diagnosis of lung cancer. The objective of CBIR system is to retrieve similar nodules from large chest CT image database for a given query nodule. This tool can also be used for training of junior radiologists by visualization of nodules having different shape and size. Lung cancer is a disease with significant prevalence in several countries around the world. Pulmonary nodules are potential manifestation of lung cancer. A pulmonary nodule is defined as approximately round opacity, with moderately distinct margin and not greater than 3 cm in maximum diameter. The five years' survival of a patient diagnosed with lung cancer can be increased from 10%-15% to 65%-80% if the pulmonary nodules are detected at an early stage. The main challenge for designing such system lies in segmentation of nodules adjacent to the pleural wall or other structure.

There is large number of images generated by hospitals and clinics every day. These images play very important role in diagnosis of diseases, medical research and education. CBIR system could facilitate the development of interactive computer aided detection technology that would exploit the wealth of data stored in the archive. Finding similar images or reference is one way to assist radiologist during daily clinical practice. Budding radiologists can explore their perception by visualization of all possible sites of lesions for given query nodule and directly provide a diagnosis report without assistance of expert radiologists. The CBIR system is validated on one public database (Lung Image Database Consortium, LIDC) and one private database taken from PGIMER Chandigarh. The average precision achieved for LIDC data set is 72.18% and for PGIMER data set is 78.29%. Feedback system is integrated with CBIR system for inclusion of knowledge of expert radiologists to reduce the semantic gap. A team of radiologists from PGMIR, Chandigarh is working as medical partner to improve the system performance.

B. Ramamurthy et al. [2] The rapid expansion of digital data content has led to the need for rich descriptions and efficient Retrieval Tool. To develop this, content based image Retrieval method has played an important role in the field of image retrieval. This paper aims to provide an efficient medical image data retrieval from a huge content of medical database using one of the images content such as image shape, because, efficient content-based image Retrieval in the medical domain is still a challenging problem. The main objective of this paper is to provide an efficient tool which is used for efficient medical image retrieval from a huge content of medical image database and which is used for further medical diagnosis purposes.

Parichat Kinnaree et al. [3] The contents-based image retrieval (CBIR) is general type of retrieval which has been an active area of research for many years. The areas of image processing and pattern recognition used standard statistical techniques to estimate the degree to which two given patterns are correlated. The focus of this study is on an image retrieval scheme that is based on the concept of maximum RGB color correlation index between images with promising results. The study sample included 1000 images of an image database. The algorithm is easy to implement. The data were analyzed by

means of percentage average precision and recall. In summary, the image with maximum RGB color correlation index is the relevance image.

Aparna W. Bondade et al. [4] With the increasing use of medical images in education, disease research, and clinical medicine, for the need for methods that powerfully archive query and retrieve these image as a result i.e. content that images are underscored. In this paper, we describe the design and development of content-based image retrieval (CBIR) system for images utilizing a reference database that contains images of multi-type of cancer disease. The CBIR system uses a multi-tiered approach to classify and retrieve images. Image involving their main type and sub type of cancer, which are mostly difficult to differentiate and classify. Comparison is evaluated based on four image feature types: color histogram, image texture, wavelet coefficients, and Fourier coefficients, using the vector dot product as a distance metric support vector machines (SVM's) can simplify well on difficult image classification problems where the only features are high dimensional histograms. The image retrieval and slide level retrieval algorithm are used to find the main type of cancer and their sub type of cancers.

L. Zheng, A. Wetzel, J. Gilbertson, and M. Becich, [5] this paper also gives the study of content based image retrievals system and using the retrievals algorithm for color histogram and image texture. The system retrieves images and their associated annotations from a networked microscopic pathology image database based on content similarity to user supplied query images**.**

III. OUR APPROACH

In our research, we are detecting melanoma using CBIR technique, based on RGB colors. **What is melanoma?** The most dangerous form of skin cancer, these cancerous growths develop when unrepaired DNA damage to skin cells (most often caused by ultraviolet radiation from sunshine or tanning beds) triggers mutations (genetic defects) that lead the skin cells to multiply rapidly and form malignant tumours.

Objective

The objective of our system is:

- To detect cancer by retrieving similar image.
- To detect stage of cancer and treatment for that.
- To calculate distance between similar images.

CBIR technique retrieve similar image from the database. In our system, user will upload picture, as a query image. System will then take this query image and will compare it with the images stored in its database to find similar images. After locating similar images in the database, system will produce that image as an output with image name. The query image is inserted by the user. After that RGB colors are extracted and feature vector is calculated which calculate the distance between the query image and the images in the database, and gives the similarity in percentage between query image and retrieved similar images. At last the retrieval system retrieves the 5 best matches and displays the result.

User upload query image in jpeg/jpg format only, and based on RGB colors, similar images from database are retrieved.

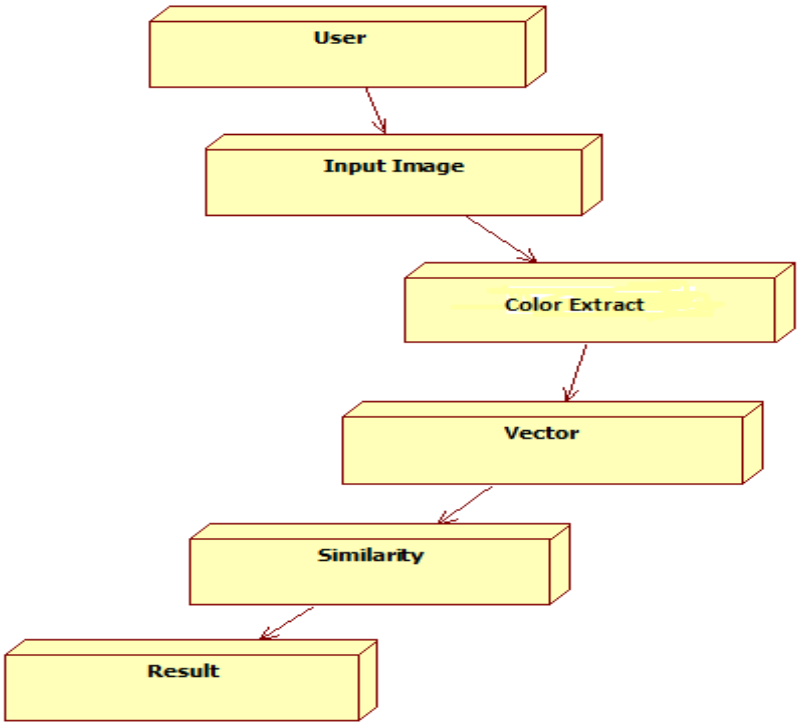

Fig. 1: Process of the System

IV. RESULT

With the help of RGBD technique in our system, we can identify, is anyone afflicted of cancer or not. If a person is desecrated with its virus will be given suitable treatment.

Result of our system is shown below in fig. 2. The left side image is the query image and right side image is the similar image retrieved from the database with similarity percentage. Here, similarity percentage is 100 i.e. there is 100% similarity between query image and retrieved image, and distance between these two images is 0.

Fig. 2: Result of the system

V. CONCLUSION

"Human Activity" means that the search makes use of the contents of image themselves, rather than relying on human-inputted metadata such as captions or keywords. The similarity measurements and the representation of the visual features are two important tasks in **Human Activity Detection using RGBD**.Given a query image, with single object present in it; mission of this work is to retrieve similar kind of images from the database based on the features extracted from the query image.

Limitation of our system is that, the result displayed does not give 100% accuracy, as image similarity is based on many feature vectors collectively, but we are limiting our similarity measurement to the color only.

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