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IMPLEMENTATION OF EFFICIENT IMAGE RETRIEVAL SYSTEM USING CLOUD COMPUTING

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Abstract - The immense development in image processing has given remarkable results in medical image retrieval. Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. In any image processing image feature plays a very significant role. Image feature extraction methods are very popular, since they give more accurate results and also it has increased work efficiency of doctors. In this paper we propose a novel approach for the image retrieval using texture-based feature extraction.

***Key Words*: Feature extraction, Texture extraction, Shape extraction, Image processing, medical image analysis.**

1.INTRODUCTION

Feature extraction is a type of dimensionality reduction i.e., transformation of high dimensionality space to low dimensionality space where a large number of pixels of the image are efficiently represented in such a way that interesting parts of the image are captured effectively. It has a broad range of applications such as Machine Learning, Image Processing etc. [5]. It has huge scope in Pattern Recognition in image processing. Hence it has given immense results in medical image analysis including counting of red blood cells, white blood cells and biopsy recognition of cancer cells; visceral size, shape, and anomaly detection, etc. However, because of the complexity of medical images, methods of feature extraction in medical image analysis applications have some limitations [1].

In the feature extraction methods, there are four types of image features often used: colour (Gray) image features, texture features, shape features and spatial relations. Through the image feature extraction, features should be able to describe objects abstractly and concretely.[1] For any image processing images should have characteristics such as Uniqueness, Integrity, Invariance under the geometric Structure, Agility, Abstractness[1] Various Feature Extraction methods are developed in the last decade but each method has its own advantage and disadvantages some are easy to implement and on other hand some have low computational complexity and some method have fast computation speed and so on.

2 EXISTING SYSTEM

The existing algorithm is to generate binary signatures of image descriptors. A frequency histogram combined with binary signatures is generated to provide a more precise representation of image features. The random sampling method and min-Hash algorithm is also used to ensure the security of the search index, and also greatly improve the image retrieval efficiency. Visual words are selected from the histogram by the random sampling method before the min-Hash algorithm is performed on binary signatures of selected visual words to generate a secure index. The proposed method achieves the balance among security, accuracy and retrieval efficiency of large-scale secure image retrieval in public clouds.

3 PROPOSED SYSTEM

Our project makes use of a Content Based Image Retrieval System with cloud computing which will be more accurate than the existing systems. Feature extraction methods which have a wide variety. And we make use of Shape based image feature extraction method in order to extract the features in medical image analysis. Image shape feature extraction methods were widely used in leucocyte image feature extraction, CT brain tumour image extraction, edge extraction head CT, lung cancer liver cancer medical image feature extraction, the extraction of human parasite eggs in the image recognition and so on.

It involves four steps:

- Defining the image descriptor: At this phase we need to decide what aspect of the image you want to describe. We are using the GLCM method as a way of extracting second order statistical texture features and used Random forest classifier for classification.
- Indexing the dataset: Now that we have your image descriptor defined, your job is to apply this image descriptor to each image in your dataset, extract features from these images, and write the features to storage (ex. CSV file, RDBMS, Redis, etc.) so that they can be later compared for similarity.
- Defining the similarity metric: now we have to bunch of feature vectors and compare them Popular choices include the Euclidean distance, Cosine distance, and chi-squared distance, but the actual choice is highly dependent on
  (1) your dataset.
  (2) the types of features you extracted.
- Searching: The final step is to perform an actual search. A user will submit a query image to the system.

4.OBJECTIVES

- To propose a system which helps in retrieving the similar images from the database.
- To use an efficient feature extraction method.
- To train the system with extracted features and to compare them with the features of the input image.
- Displays the similar retrieved images.

5. OVERVIEW OF PROPOSED SYSTEM

The overview and functionality of the system is represented in the given block procedure to be followed are:

- User will provide the query image.
- Then the feature vector depicts extracting image features to a distinguishable extent.
- Then similarity matching is done to obtain the result that is similar.
- Similarly from the image database proceed the following steps and then compare both the feature vector result of the query and the image database.
- Finally the comparison of both are indexed a nd retrieved and provide relevant images.

This shows how the query formation and image database are indexed and retrieved. The following

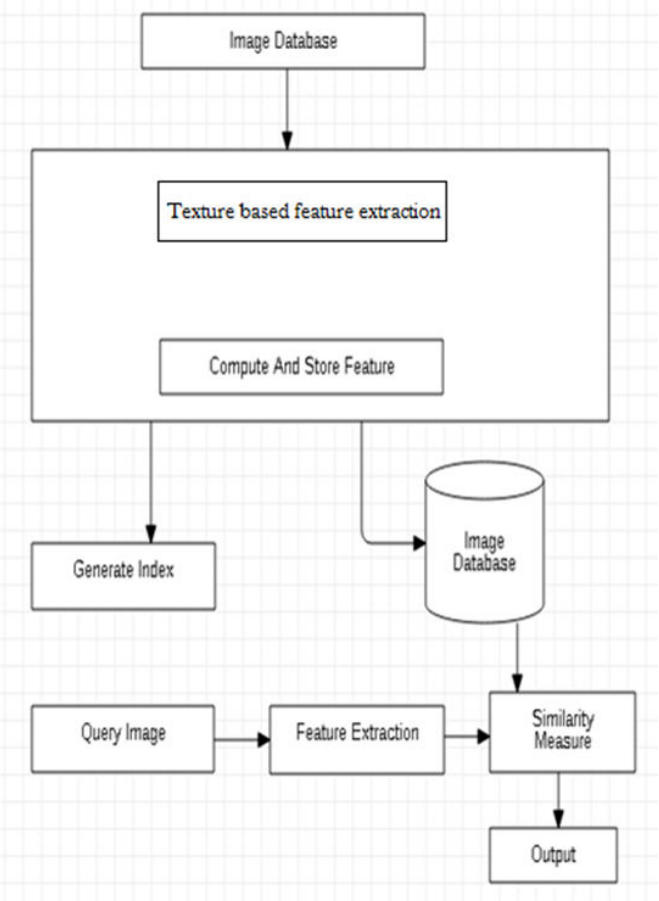

Fig1: Architecture diagram of CBIR

6 DATASETS USED

Data set is collected from the Kaggle. Brain MRI images for brain tumour detection and it has the images of scanned patients. Their total number of images are 253 in which 155 are positive and 98 are negative.

Covid and non-covid lung images and total number of images 746 in which it has positive 349 and negative cases 397.

7. BASIC REQUIREMENT

7.1 Hardware Requirements:

- Processor CORE i3 or high
- Hard Disk -200 GB
- Memory -8GB RAM

7.2 Software Requirements:

- Windows 10
- PythonAnywhere Cloud Services
- Python for building the model (Anaconda software).

8.RESULTS

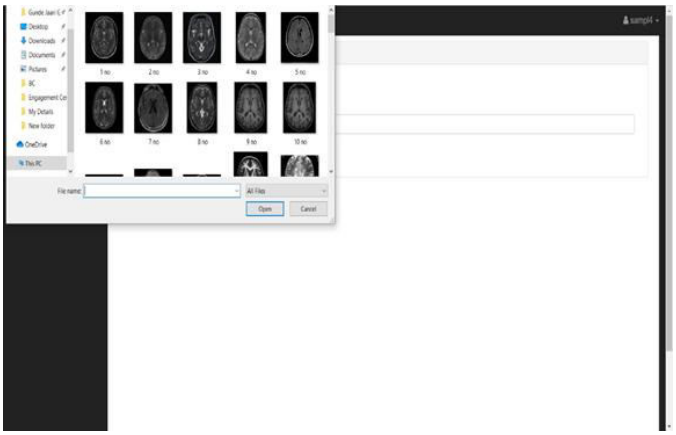

Fig2: Inputting: the query image

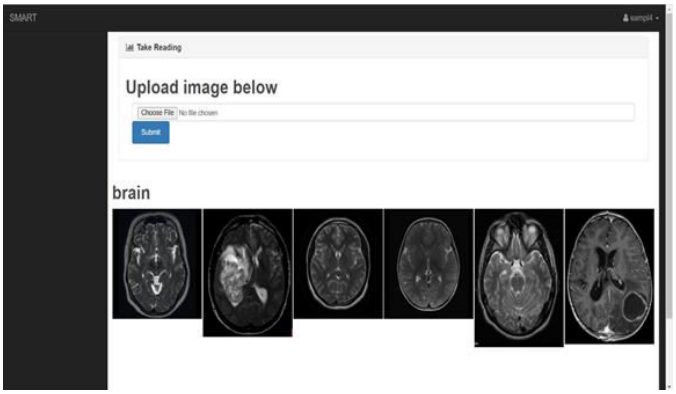

Fig3: output: the similar images

9. CONCLUSION

A technique that effectively uses most of the information from images is the backbone of an efficient content-based image retrieval system for medical databases. Feature extraction is an important link of the image analysis, which received extensive attention in medical image analysis as well. We had a literature survey on various methods to develop a content-based image retrieval system for medical image analysis. we have discussed about the some of the feature extraction methods namely shape based and texture-based methods and future work include Reduce the query execution time, To apply neural networks to further improve the quality of the results, Fingerprint recognition, retina identification, object detection, etc for large image databases. There is a scope for time optimization also.

The results are quite good for most of the query images and it is possible to further improve by fine tuning.

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