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A PATH FOR HORIZING YOUR INNOVATIVE WORK

AN OPTIMIZE MECHANISM FOR MULTIFUNCTION DIAGNOSIS OF KIDNEYS BY USING GENETIC ALGORITHM

MISS. VAISHALI M. SAWALE[1], PROF. A. D. CHOKHAT[2]

1. ME (CSE) 2nd Year, P.R. Patil college of Engineering, Amravati.
2. Assistant Professor, P.R. Patil college of Engineering, Amravati

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Abstract: In existing system, it was take more time (in minute) to detect and the output was less accurate. The medical technicians laboratory adjust rules and parameters (stored as "templates") for the included "automatic recognition framework" to achieve results which are closest to those of the clinicians. These parameters can later be used by non experts to achieve increased automation in the identification process. The system's performance was tested on MRI datasets, while the "automatic 3-D models" created were this research presents a multifunctional platform focusing on the clinical diagnosis of kidneys and their pathology (tumors, stones and cysts), using a "genetic algorithm". This research presents the automatic tumor detection (ATD) platform: a new system to support a method for increased automation of kidney detection as well as their abnormalities (tumors, stones and cysts). As a first step, specialist clinicians guide the system by accurately annotating validated against the "3-D golden standard models." Results are promising to give the average accuracy of 97.2% in successfully identifying kidneys and 96.1% of their abnormalities thus outperforming existing methods both in accuracy and in processing time needed. In this paper, the proposed design will define the "genetic algorithm" which will generate the output within a second and more accurate than the existing system.

Keyword: Detect**,** clinicians, Automatic, genetic algorithm, Abnormalities, Accurate.

Corresponding Author: MISS. VAISHALI M. SAWALE

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INTRODUCTION

Medical imaging is the technique and process used to create images of the human body (or parts and function there) for clinical purposes (medical procedures seeking to reveal diagnose or examine disease) or medical science (including the study of normal anatomy and physiology). Although imaging of removed organs and tissues can be performed for medical reasons, such procedures are not usually referred to as medical imaging, but rather are a part of pathology [1].

A kidney is a bean-shaped organ located toward the back of the body, beneath the rib cage. A person is usually born with two kidneys, located on either side of our spine. The primary function of the kidney is to act as a filter to cleanse the blood of waste products and to make hormones to support blood pressure and blood cell production. The kidneys are composed of microscopic tubules that function as filtering units. As they filter the blood, the waste products accumulate in fluid, now called urine, which exits the kidneys via long tubes, the ureters, which pass into the bladder where it is stored and, eventually, expelled from the body.

The study has focused on the kidney image segmentation and diagnosis for stone, tumor, cysts detection. The rapid evolution of advanced medical image modalities such as the modern MRI scanners and the large amount of data provided have brought about the need for more automatic processes in computer aided diagnosis. Clinicians need to examine large numbers of complex medical images to detect abnormalities; a difficult and time consuming task. Hence, there is a need for systems that will automatically detect organs and their possible abnormalities and provide useful metrics [2].

2. Related Work

Several algorithms detect kidney abnormalities, addressing the challenge of increased difficulty in their delineation due to their intensity variation. Prevost *et al.* [3] had automatically localized the kidney with a novel ellipsoid detector, and then applied deformation of this ellipsoid with a model-based approach in the segmentation process. Using the Dice Similarity Coefficient (DSC) as a metric [4], this system achieved a DSC of 87.5%. Similar to this platform, they calculated the accuracy of automatic segmentation outcome by comparing it with the result of the semiautomatic segmentation method coming from the radiologist's work (golden standard). Lin *et al.*'s [5] model-based approach for kidney Segmentation achieved an average correlation coefficient of 88%, while [6] used Bayesian concepts for a probability map generation to achieve an automatic kidney Parenchyma volume try with a DSC of 90.3%. [7] used an automated graph-cuts segmentation technique for dynamic contrast-enhanced 3-D MR

renography achieving a DSC of 96% for the kidney and 90% for the cortex and the medulla. Their method was very fast (approximately 20 min) compared with the time needed for a manual segmentation of about 2.5 h, In [8], the authors presented a combination of texture features and a statistical matching of geometrical shapes of kidneys for an automatic segmentation in 3-D MRI images with a mean DSC of 90.6%.

Concerning abnormality detection, [7] presented a finite element method based on 3-D tumor growth prediction for kidney tumors, with an average true positive fraction of 91.4% on all tumors. Tamilselvi and Thangaraj [8] used an improved seeded region growing method and classification of kidney images with stones and focused on the kidney image segmentation and diagnosis for stone detection. In [9] the authors achieved a DSC of 95%.

3. Methodology

This method combines the low level features automatically extracted from images with high level knowledge given by the specialist in order to suggest the diagnosis of a new kidney image. This is to implement a computer-aided decision support system for an automated diagnosis and classification of kidney images.

The proposed system is divided into mainly,

i) The training phase and

ii) The test phase.

Algorithm:

Input - training images and a test image

Output - kidney category classification

1. Input image is preprocessed.

2. Extract the required features.

3. Relevant features are extracted through feature selection process.

4. Execute PreSAGe algorithm.

5. Generate association rules.

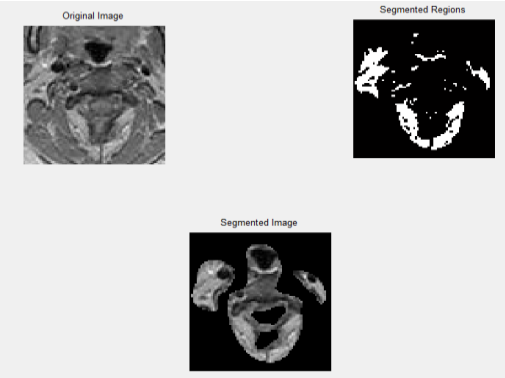
6. Classify the image based on generated association rules.

4. Implemented Work

The propose work will divide into the following model:-

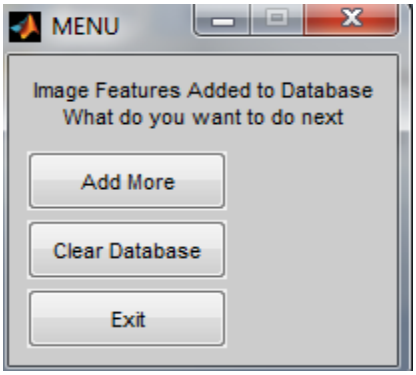
1. Image segmentation:

In this module the input image will be segmented to find the most probable portion where kidney disorder might exit. For this various techniques like double thresholding, fuzzy, means segmentation can be used to detect tumor stones, cyst.



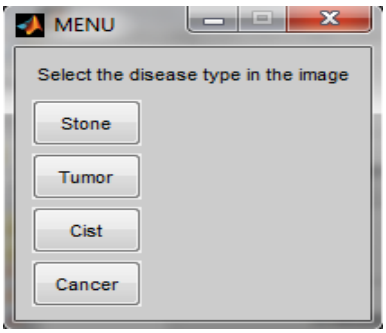
2. Feature Evaluation:

In this module the feature of segmented image will be found and store into database with the type of deformative.



3. Database creation:

In this module the input image will be segmented and features will be evaluated along with the deformative types and this will be stored to database.



4. Application of genetic Algorithm:

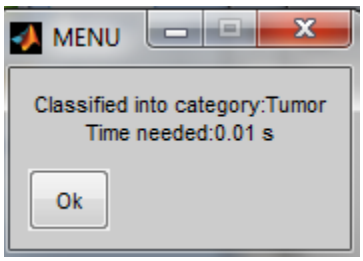
In this module the genetic algorithm will be developed and various features will be evaluated which will help in proper classification of the input image.

5. Database evaluation or diseases detection:

In this module the given input image will be segmented and feature will be evaluated with the help of genetic algorithm and with the help of classification Techniques .we will get the type of diseases all with its localization.

5. Result

In this part to show the disease type and how many time taken to detect the disease type.



6. CONCLUSION

Our approach is divided into four major: pre-processing, feature extraction and selection, association rule generation, and generation of diagnosis suggestions from classifier. The results are applied to real databases and the proposed system achieves high sensitivity and accuracy for diagnosing. This brings more confidence to the diagnosing process.

In this project to diagnosis the kidney disease within second and to increase accuracy.

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