ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 9, Issue 3, March 2020

A Region Grow Segmentation Approach to Detect Kidney Stone

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ABSTRACT : This study explored the event of a semi-automated program that used image process techniques and pure mathematics principles to outline the boundary, and segmentation of the urinary organ space, and to enhance kidney stone detection. It marked detected excretory organ stones associate degreed provided an output that identifies the scale and site of the excretory organ supported component count.The program was tested on customary KUB CT scan slides were divided into 2 teams supported the presence and absence of excretory organ stones in their hospital records. Results showed that the program has high accuracy, that suggests the program's potential in diagnostic potency for urinary calculus detection.

KEYWORDS: Kidney stone detection, CT scan, pixel count

I. INTRODUCTION

Optical coherence imaging (OCT) is a longtime modality for non-invasive assessment of diseases.Texture analysis has been actively investigated for tissue characterization.

The potential of texture analysis has been demonstrated in numerous biomedical applications, including OCT imaging of skin, bladder, eye,atherosclerotic plaque, esophagus, and breast .

In general, texture analysis techniques can be classified into three groups: statistical technologies, spectral technologies, and structural technologie. The choice of optimum methodology for texture analysis might vary betting on the precise medical specialty applications.

OCT and its practical extension (Doppler Gregorian calendar month and optical microangiography, OMAG) are used for imaging kidney microanatomy and microcirculation.

OCT can resolve renal corpuscles and urin if eroustubules. The morphological changes in these structures square measure related to ischemia-reperfusion injury.

Automatic formula for image analysis formula has been developed antecedently for quantifying spatially-resolved hollow diameter as a possible biomarker for indicating viability of the transplant urinary organ

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II. LITERATURE SURVEY

Ultrasound imaging plays an important roles in medical field to guage excretory organ size, position.

It helps to find structural abnormalities additionally as a result of the presence of cysts, stones, cancer, noninheritable anomalies, swelling, blockage of piddle flow etc.

But presence of speckle noise and low contrast in ultrasound images, detection of kidney could also be a difficult also as challenging task.

During this paper we have a tendency to develop and implement a system, which might phase human excretory organ from ultrasound pictures, usable throughout surgical operations like punctures.

First, we take input image and perform restoration thereon image. Then we will turn down speckle noise and smooth resultant image using Gabor filter.

Histogram equalization is used to strengthen the image quality. For this study, two segmentation techniques were chosen to be compared contains cell segmentation and region based segmentation.

Lastly we perform refinement and crop the segmented kidney region from the primary image.

III. EXISTING SYSTEM

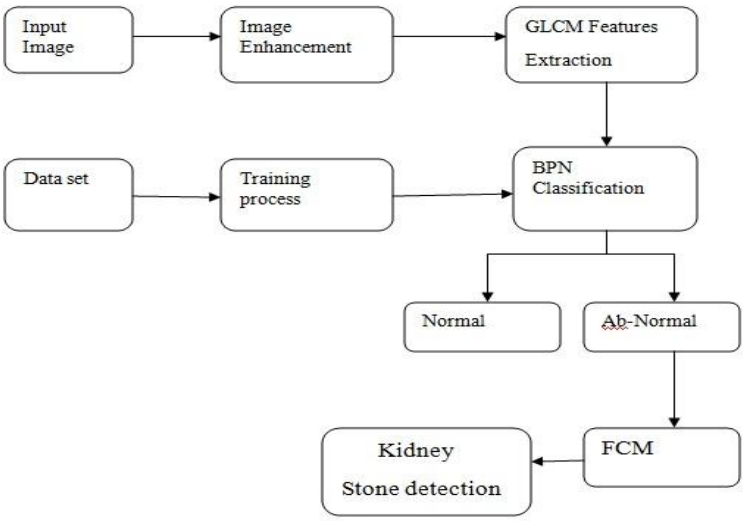
The previous techniques that are used to find kidney stone in matlab are based on Fourier transform and rgb system.

DRAWBACKS:

The process will be slow and accuracy will be low by using Fourier transform and rgb system.

IV. PROPOSED SYSTEM

In proposed system we are using dwt and grayscale technique so that the accuracy and speed will be high and the time take taken will low.



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The co-occurrence matrix is constructed, based on the orientation andn distance between image pixels.Then meaningful statistics are extracted from the matrix as the texture representation .Haralick proposed the following texture.

features :

1. Energy
2. Contrast
3. Correlation
4. Homogenity

Energy: Energy: it's a grayscale image texture live of homo-geneity ever changing, the of image gray-scale uniformity of weight and texture.

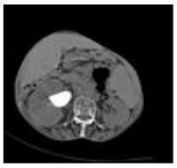
Contrast: distinction is that the diagonal close to the instant of inertia which is measure the worth of the matrix is distributed and pictures of native changes in number, reflective the image clarity and texture of shadow depth.

Correlation Coefficient: Measures the chance incidence of the specified element pairs.

Correlation: sum(sum((x- μx)(y-μy)p(x , y)/σ x σ y))

Homogeneit : Measures the closeness of the distribution of components within the GLCM

V. EXPERIMENT AND RESULT



A) INPUT

B) BROWSE

C) PREPROCEESSING

D) DWT FEAT EXTRATION

E) DATABASE

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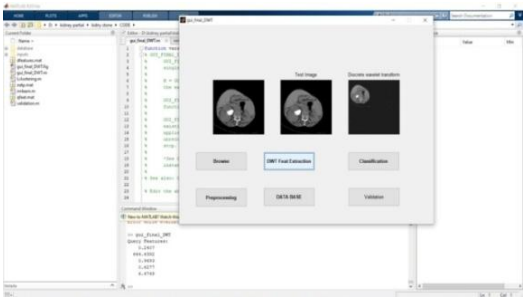
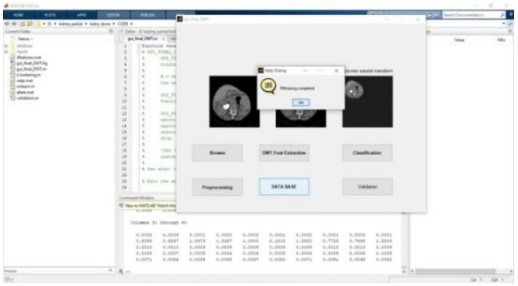


F) CLASSIFICATION



G) VALIDATION

VI. CONCLUSION

The segmentation to discover excretory organ calculi has been projected.We use region growing method for segmenting the affected part from the renal image. Region growing which is a best region-based image segmentation method.It is also classified as a pixel based image segmentation method since it involves the selection of initial seed points. It exploits the important fact that pixels which are close together have similar gray scale values. The segmentation algorithm has been implemented in MATLAB software. It serves as a complete environment for high-level programming as well as interactive data analysis. Thus using MATLAB the segmented output has been shown in the result. The obtained result segments the calculi part accurately from the scan images which are given as input and provides the segmented calculi is a separate image.

REFERENCES

1. Prema T. Akkasaligar, Sunanda Biradar and Veena Kumbar, "Kidney stone detection in computed tomography images", IEEE, 2017
2. S.Rizwana, Dr.S.Pannirselvam "Massive Regional Texture Extraction for Aerial and Natural Images" (IOSR Journal of computer engineering) Volume 11, Issue 5 (May - June 2013)PP 40-46.
3. R.Anjit Raja, J. Jennifer Ranjini "Segment Based Detection And Quantification of Kidney Stone And Its Symmetric Analysis Using Texture Properties Based On Logical Operators With Ultra Sound Scanning" (International Journal of Computer Applications) (2013).
4. Lokesh B, Shailaja K "Segmentation and Classification of Based Lesions in Ultrasound Images" International Journal of Scientific & Technology Research, Volume 3, Issue 6, P.No: 238 - 242 June 2014.
5. Rozy Kumari, Narinder Sharma "A study on the different image segmentation technique" International Journal of Engineering and Innovative Technology, Volume 4, Issue 1 ,P.No:284-288 July 2014.
6. P.R.Tamilselvi "Detection of Renal Calculi Using Semi Automated Segmentation Approach" (International Journal of Engineering and Innovative Technology) volume 2 Issue 3 May 2013.
7. Saman Ebrahimi, Vladimir Y.Mariano, "Image Quality Improved in Kidney Stone Detection of CT Images" (Journal of Image and Graphics) volume 3 NO.1, June 2015.