Review Paper on Human Heart Disease Detection using Content Based Image Retrieval

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Abstract :-- Nowadays a research on heart disease is very helpful in the medical sections for automatic interpretation of disease within small time and with more accurate results. The objective is to study and identify types of heart disease to develop a robust, simple, cost effective and more accurate interpretation algorithm. This paper contains the survey of various image processing techniques to detect disease. Now a day's image processing technique is becoming a key technique for diagnosing the various features. This paper mainly focuses on various image processing stages such as image acquisition, pre-processing , segmentation, feature extraction and classification techniques such as k-Nearest Neighbour classifier , k-means Classifier,Neural Network, Support Vector Machine, and Artificial neural network, Fuzzy logic .

Key Words: -- Image processing techniques, Classification techniques, CT Images.

I.   INTRODUCTION

According to World Health Organization(WHO), heart disease is the leading cause of death in the UK, USA, Canada and Australia. The number of adults diagnosed with heart disease stands at 26.6 million. The total number of deaths due to heart disease read 17.3 million a year according to the WHO causes of death. It refers to a group of diseases or problems in which the heart or the vessels supplying blood to the heart are damaged and are not able to function in a normal way. For many years, it was believed that heart diseases occur in older people. But now-a-days, heart diseases are quite common in young adults, mainly because of modern lifestyle and unhealthy eating habits. Heart diseases take years to progress and may begin to develop at a very young age. However, most people do not show any symptoms of heart diseases before they reach their age of 50s or 60s. Some types of heart defects are present at birth. These are called congenital heart diseases. There are several factors that increase the risk of heart diseases and associated conditions. These include age, gender, high blood pressure, high cholesterol levels and hypertension. Factors like weight, blood pressure and cholesterol levels can be controlled by making dietary and lifestyle changes to significantly improve cardiovascular health. Few changes include eating a low fat, high fibre diet with fruits and veggies, quitting smoking, giving up alcohol, increasing physical activity and reducing stress.

II. LITERATURE SURVEY

Pattern Based Object Recognition in Image Processing. Author (Samundra Deep, JianPing et al): In this paper Authors proposed that every object have a pattern & a pattern is a low level feature that have specific structure. So identity that pattern is a hot field of our research. The paper describes CBIR technique for pattern recognition there are segmentation methods such as feature border color& edge etc. also for feature extraction object must needed to identify & detect . Object identification & detection method is area for feature extraction. This technique requires higher degree of accuracy[1].

Human Heart Disease Prediction System using Data Mining Techniques. Author (Theresa Princy. R , J. Thomas):Author proposed various data mining and classification techniques such as DT,KNN ,Naive bayes , neural network to predict heart disease. Patient records are classified and predict using data mining risk level of patient is detected using KNN and ID3 algorithm. Patient record stored in database which consist of 3 types attributes such as input, key and prediction attributes[2] .

Detection of Lung Cancer Using Marker Controlled Watershed Transform.Author (SayaliSatishKanitkar , N. D. Thombare): In this paper,Marker controlled watershed segmentation

technique is used which separates the touching objects in the image. Its advantage is it provides best identification of the main edge of the image. Drawback of this is that it produces excessive Over Segmentation[3].

Lung Cancer Detection on CT Images by using Image Processing. Author (Anita chaudhary ,SonitSukhraj Singh): The paper describes different processing stages are used like Pre-processing, Enhancement, Segmentation, Feature extraction ,Classification. Thresholding and watershed segmentation approaches are used for segmentation purpose. Thresholding selection is not always straight forward and does not guarantees of objects and watershed produces over segmentation so both are incomplete .so both approaches have solution i.e. post processing with morphological operator[4].

An Application of image processing techniques for Detection of Diseases on Brinjal Leaves Using K-Means Clustering Method. Author (Anand R, Veni S, Aravinth J): This Proposed work exposes about diagnosis of leave disease by using K-means clustering algorithm. It gives 85-95% accuracy. Advantages of this technique is that its computing speed is faster than hierarchical clustering if k is smalls. also it has drawback that it is difficult to predict k-value and might target data is differ from source data size density and its cluster[5].

Classification of Lung Cancer Stages on CT Scan Images Using Image Processing. Author (Anjali Kulkarni ,AnaghaPanditrao): In this paper, Lung cancer is most common disease in the world. Image process techniques are used for earlier detection of cancer. Author classified the ling region extraction approach in rule based and pixel based categories.Image pre-processing techniques such as image smoothing, enhancement, segmentation are applied on CT scan images. Feature extraction play important role to identify the stages of lung cancer[6].

Plant Disease Detection Using Image Processing. Author (Sachin D. Khirade, A. B. Patil): The paper work exposes that detection of plant disease which ac- curately detected by the technique first method is used segmentation for detect the spot by boundary values. Another is K-means algorithm for classification and Ostu threshold which convert gray values into binary

values (0,1) it checks for symptoms and after classification ANN is used . Its drawback is that its difficult to predict K-values , And target data gets differ from source data in size , density and result generate different cluster[7].

Statistical Analysis of Lung CT Images for Ground Glass Diagnosis. Author (Dr Punal .M. Arabi1 et al): By using CAD system in which HRCT , GLCM algorithm are used to get Ground Glass images , by comparison of ground glass image with database image it result into person's information that is person have lung cancer or not. The main drawback of this system is that it couldn't give the direct result . It only gives some values of ranges by using that values we have to predict result[8].

Fruit Disease Detection using Color, Texture Analysis and ANN. Author (AshwiniAwate, DaminiDeshmankar et al): This system uses two image database. One for implementation of query images and other for training of already stored disease images. K-means clustering method is applied for image segmentation. Open CV library is applied for implementation.ANN concept is used for pattern matching and classification of disease[9].

Orchid Disease Detection Using Image Processing and Fuzzy Logic. Author (Muhammad T. MohamadAzmi): In this paper, Fuzzy Logic is used to process the data which we get from image processing to and an approximate range of values rather than fixed values. also used the term i.e Fuzzification which is used to translate crisp values into linguistic values. another term is Defuzzification is exactly opposite to fuzzification[10].

Bone Cancer Detection from MRI Scan Imagery Using Mean Pixel Intensity. Author (MadhuriAvula , Narasimha Prasad Lakkakula).: In this paper author used K-means clustering algorithm for bone cancer detection by doing segmentation of bone images . In further process bone cancer detection is done by evaluating mean intensity as indentified area also discussed and used thresholding for classification of images of Normal or disease bone images. DICOM [Digital Imaging & Communications In Medicine] is a

standard used for image handling and transmitting i9nto with medical images[11].

Performance Comparison of Image Segmentation Techniques for Lung Nodule Detection in CT Images. Author (Priyanka Karma, Savita Gupta): Author proposed comparison between three image segmentation techniques such as iterative thresholding, region and fuzzy region based level set method for detecting lung cancer by analyzing CT images. Comparison between these three method shows that iterative thresholding has high degree of accuracy to detect well circumscribed nodule but fail to detect pleura attached nodule .RBLSM may not be able to detect well circumscribed nodule whereas FRBLSM is better in terms of false positive and true positive[12].

Cancer Diagnosis using Automatic Mitotic Cell Detection and Segmentation in Histopathological Images. Author (Logambal. G ,Saravanam. V): In this paper author proposed an effective techniques for mitotic cell segmentation and detection in histopathological images. In pre-processing module is implemented by grey-scale conversion, resizing of images and image filtering. The proposed method uses the SVM classifier and Bayesian classifier after segmentation and feature extraction steps in histopahtologicalimages[13].

Identification and segmentation of exudates using SVM classifier. Author (T.Ruba, K.Ramalakshmi): Presented work carried out SVM [Support Vector Machine] classifier technique for resizing & filtering of image median filter is used. Then SVM classifier is used for classification of their filtered images also Gabor feature for edge detection & GLCM feature provided to system for the measurement of performance is calculate by metrics of classifier like sensitivity , specificity & correctness etc[14].

Classification of Cotton Leaf Spot Disease Using Image Processing Edge Detection Techniques. Author (P.Revathi, M.Hemalatha): In this paper author exposes new technology HPCCDD proposed algorithm. Initially Homogeneous technique such as sobel& canny filter are used edge detection to identify the disease spots[15].

III. CONCLUSION

Thus we have studied image processing and classification techniques for disease detection. The main characteristics of disease detection are speed and accuracy. Hence there is working on development of fast, automatic, efficient and accurate system, which is use for disease detection. Work can be extended for development of system which identifies various diseases. As now a day's heart diseases are affecting humans more and more, hence fast and accurate system is required.

REFERENCES

[1] Samundra Deep, Jian-Ping Li, AsifKhan,PATTERN BASED OBJECT RECOGNITION IN IMAGE PROCESSING,978-1-4799-7208- 1/14/$31.00 2014 IEEE.

[2] Theresa Princy. R , J. Thomas ,Human Heart Disease Prediction System using Data Mining Techniques, 2016 International Conference on Circuit, Power and Computing Technologies [ICCPCT] IEEE.

[3] SayaliSatishKanitkar , N. D. Thombare , Detection of Lung Cancer Using Marker-Controlled Watershed Transform, International Conference on Pervasive Computing (ICPC), -1-4799-6272-3/15/$31.00(c)2015 IEEE.

[4] Anita chaudhary , SonitSukhraj Singh ,LUNG CANCER DETECTION ON CT IMAGES BY USING IMAGE PROCESSING, 2012 International Conference on Computing Sciences978-0-7695-4817-3/12 $26.00 2012 IEEE.

[5] AnandR,VeniS,Aravinth J, An Application of image processing techniques for Detection of Diseases on Brinjal Leaves Using K-Means Clustering Method, 2016 Fifth International Conference On Recent Trends In Information Technology, 978-1-4673 9802-2/16/$31.00 c 2016 IEEE.

[6] Anjali Kulkarni1 ,Anagha Panditrao2, Classi_cation of Lung Cancer Stages on CT Scan Images Using Image Processing, 2014 IEEE International Conference on

Advanced Communication Control and Computing Technologies (lCACCCT).

[7] Sachin D. Khirade, A. B. Patil, Plant Disease Detection Using Image Processing, 2015 International Conference on Computing Communication Control and Automation, 978-1-4799-6892-3/15 $31.00 2015 IEEE

[8] Dr Punal.M.Arabi1, Nanditha Krishna2, Vamsha Deepa.N3, Lakshmi BaiP4,Statistical Analysis of Lung CT Images for Ground Glass Diagnosis, International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB16), 978-1-4673-9745-2 2016 IEEE.

[9]AshwiniAwate, DaminiDeshmankar,GayatriAmrutkar, UtkarshaBagul, FruitDisease Detection using Color, Texture Analysis and ANN, 978-1-4673-7910-6/15/$31.00c 2015 IEEE.

[10] Muhammad Thaqif bin MohamadAzmi,Naimah Mat Isa, Orchid Disease Detection Using Image Processing and Fuzzy Logic,978-1-4799-3178-1/13/$31.00 2013 IEEE.

11] MadhuriAvula ,Narasimha Prasad Lakkakula ,Bone Cancer Detection from MRI Scan Imagery Using Mean Pixel Intensity, 978-1-4799-6487-1/14 $31.00 © 2014 IEEE DOI 10.1109/AMS.2014.36

12] Priyanka Karma, Savita Gupta ,Performance Comparison of Image Segmentation Techniques for Lung Nodule Detection in CT Images, 2015 International Conference on Signal Processing, Computing and Control (2015 ISPCC)

13] Logambal. G ,Saravanam. V ,Cancer Diagnosis using Automatic Mitotic Cell Detection and Segmentation in Histopathological Images, Proceedings of 2015 Global Conference on Communication Technologies(GCCT 2015),978-1-4799-8553-1/15/$31.00 © 2015 IEEE

14] T.Ruba, K.Ramalakshmi Identification and segmentation of exudates using SVM classifier, IEEE Sponsored 2nd International Conference on Innovations in Information Embedded and Communication System ICIIECS'15

15] P.Revathi, M.Hemalatha ,Classification of Cotton Leaf Spot Disease Using Image Processing Edge Detection Techniques,2012 - International Conference on Emerging Trends in Science, Engineering and Technology