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Review of Detecting Dengue Fever and Leukemia Cells

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Abstract:
The main objective is to detect and count platelets to diagnose Dengue Hemorrhagic Fever and leukemia cells for cancer, this is to reduce the labour intensive, time and cost. Blood cell classification is important to evaluate and for disease deionisation. The blood related disease is classified only after the classification of blood cells. The platelets count can be estimate by using some segmentation techniques and morphological operations are applied to evaluate number of platelets which are used to diagnose dengue by using microscopic images of blood. Leukemia is a blood cancer that begins with bone marrow and detection of leukemia by using different image processing algorithms. The database management of the donor and access or is to maintain the blood bank with embedded system and sensors. And providing blood to the patients with minimal blood transfusion error.

Key Terms: Dengue Hemorrhagic Fever, Digital Image Processing, Platelet Count, Leukemia, blood cells.

I. INTRODUCTION

The process of managing the blood bag that is received from the blood donation events needs a proper and systematic management that is done by the blood banks. Dengue is one of the viral illnesses, spread by Aedesaegypti mosquito. Our main objective is to detect dengue and leukemia cells. Dengue fever is detected by platelets count. Dengue fever is of three forms: breakdown fever, Dengue hemorrhagic fever, Dengue shock syndrome. By detecting immature blast cells, leukemia can be identified and also it can be define that it is either chromic or acute. And to detect immature cells, number of methods used like area opening and closing, erosion and dilation, watershed transform and clustering techniques.

II. LITERATURE SURVEY

[1] J.Poornima et@ all proposed in Indian Journals of Science and Technology. The main objective of this paper is to detect and count platelet to diagnose dengue fever. The platelet count is to estimate using various segmentation techniques and morphological operations and with the help of platelets count Dengue fever infection is detected. "Flood fill" this is one of the morphological operation which is used to detect platelet with platelet size and they are successful in estimating the count of platelet using image processing techniques. The manual counting of platelets takes time. Therefore the automatic analyzer, the system is cost efficient is used. Further with the help of platelet count the stages of dengue fever infection can be detected by using image processing techniques.[2]Gautham Mahesh proposed in Jour of Adv Research in Dynamical & Control Systems. The technology is based on microscopic images that is derived from blood smears obtained using a digitalized camera attached to microscope. Image processing and segmentation techniques are used to estimate platelet count. Further to improve the accuracy of the results, an analysis of symptoms present in the patients is used in conjunction of platelet analysis. it proposed a vector based method for screening the samples. Then the samples are then classified into one of three classes, which are high probability of dengue, moderate probability of dengue and low probability of dengue. one of the particular limitations of the algorithm was the loss of few platelets in segmentation process. The segmentation is also tended to include certain regions of lymphocytes which are present in microscopic blood smear image. Even though the disease is present the platelet count is above the considered threshold value and they may affect the accuracy of the algorithm. therefore they use the process which is semi-automated in both clustering and thresholding based segmentation method. [3] Reenu Marie Philip et@ all proposed in International Research Journal of Engineering and Technology (IRJET). In this paper their proposed is based on WBC and also it avoids the complexity of lab technicians and reduce errors. The steps involved are pre-processing, segmentation, feature extraction and classification. Noise in the microscopic blood images can be removed by median filter. The segmentation is followed by thresholding in which WBC is extracted. By using SIFT feature extraction technique nucleus can new extracted. Then it classify infected or non-infected using SVM classifier. [4] Praveen A Shinde proposed in International Journal of Contemporary Medical Research. In this paper Dengue fever can be analysed specifically through discovery of infection parts or else in a roundabout way through serological techniques. Due to the intense onset and seriousness of the side effects, patients with dengue typically display inside the initial 2 days of ailment at social insurance offices. Because of the nonappearance of both particular treatment choices and an immunization, prophylaxis by evasion of mosquito chomps by Aedes mosquitos remains the foundation of dengue counteractive action. The main objective was the present study to determine the platelet count and the severity of the dengue fever in paediatric patients. [5] Anuradha Radha Krishnaet @all proposed in Annals of International Medical and Dental Research (AIMDR). The aim of this paper is to detect dengue by various screening and confirmatory diagnostic methods. Platelet count is one such screening test and a better parameter for early prediction of Dengue hemorrhagic

fever (DHF) and Dengue shock syndrome (DSS). Blood samples of the patients were collected in morning times and was sent to lab for estimation of platelets. Increase in Platelet count was observed among all selected dengue patients. Papaya leaf extract improves thrombocytopenia condition, which in turn decreases the incidence of Dengue hemorrhagic fever and Dengue shock syndrome. [6] Dr.P V Rama Raju et@ all proposed in JETIR This paper mainly approaches the leukemia detection process where image is a tool which is used here for understanding the process of entire detection. Using this tool there is a facility of converting RGB image

SL.NO	Name Of The Paper	Methodology	Merits	Demerits
1	A survey on Image Processing Techniques Used For Detection Of Leukemic Cells.	Otsu Thresholding Algorithm is used.	To detect leukaemia at earlier stage with the help of algorithms.	The result produced by haematologist will not be accurate.
2	Detection Of Dengue Fever With Platelets Count Using Image Processing Techniques.	To detect and count platelet to diagnose dengue haemorrhagic fever.	To detect stages of dengue virus Infection.	Problem in counting overlapping cell.
3	Daily Platelet Counts For Predicting Dengue Shock Syndrome.	The prognostic value of daily haemocrotic levels and platelets count assessed using graphs and regression models.	Daily monitoring system which identifies patients at high risk of DSS.	Development of prediction models that incorporate symptoms, sign and measurement.
4	Association Of Platelet Count And Serological Markers Of Dengue Infection Importance Of Ns1 Antigen.	Enzyme linked immunosorbent assay (ELISA) for qualitative and quantitative analysis.	Higher sensitivity based ICT tests.	Polymerase chain reaction cannot be used.
5	Assessment Of Platelets Level in Serum Samples Of Dengue Patients By Providing Papaya With Other Fruits	Blood Samples was estimated using automated hematologic analyser.	Papaya Leaf helps patients to recover from dengue.	Still many more studies are needed to evaluate the efficacy of papaya
6	Leukaemia Detection Using Digital Image Processing Techniques.	Shape based feature is used to detect.	It is more accurate for counting leukemic cells and it also gives high accuracy	Certain limitations are maintained for watershed transform, histogram equalization.
7	Automated Detection And Classification Techniques Of Acute Leukaemia Using Image Processing	Texture feature are used such as homogeneity, energy correlation and entropy.	It increases the likelihood of leukaemia patient safely.	Selection method and dimensional reduction is not implemented to get efficient representative features.
8	Automated Leukaemia Detection Using Microscopic Images.	Histogram equalization and zacks algorithm is applied.	To improve the accuracy and reduce time to detect the manual approach.	The accuracy level is not maintained.
9	Disease Diagnosis Using RBCs and WBCs Cell Structure By Image Processing.	Morphology and Hough Transform is used.	They are helpful for cell counting and reduce the time of cell counting.	The algorithm depends on camera used, size of cells.
10	Automated Dengue Detection.	CNN based network is used.	It avoids complexity of lab technicians and reduces error.	The microscopic blood images contain noise.

to gray colour image and converting grey colour image to binary image directly In this process using cell count and some other parameters like area and perimeter leukemia can be detected and can classify whether it is ALL (or) CLL (or)Not. [7] Tathagata Hazraet@ all proposed in International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS). This paper is about the proposal of automated leukemia detection. In this paper they wore automated technique for detecting leukemia. The automated technique involves some filtering and K-mean clustering approach for image pre-processing and segmentation purpose. Automated counting is used to count WBC to detect leukemia. Some features like area, perimeter, mean, centroid, solidity, smoothness, skewness energy, entropy, homogeneity, Standard deviation etc, are

extracted and calculated. Neural network methodologies is used to know directly whether the image has cancer affected cells or not.

[8] R.G Bagasjvara et@ all proposed in 2016 2nd International Conference on Science and Technology-Computer (ICST). Hematological disorders of leukocytes are very frequently in medical field and it faces difficulty in classifying WBC included cancerous leukemia cells. The diagnosis of this disease is made by microscopic analysis of peripheral blood smear. This kind of diagnosis is complex, costly process, time consuming and inherently subjective. To avoid such problem a classification technique based on computer vision is required. This paper is mainly to detect leukemia using image processing. [9] N.Poornimaet@ all proposed in International Journal of Advanced Research in Computer and Communication Engineering. In this paper they describe the study of detecting leukemia from blood smear obtained from microscope with different image processing algorithms. Leukemia is blood cancer that begins with bone marrow. The main aim of this paper is to detect leukemia at earlier stage and they employed automated system to detect leukemia which provide accurate results Support vector machine is mostly used for classification and Otsu's thresholding is used for segmentation. [10] Himali P. Vaghela proposed in International Journal of Applied Information Systems (IJAIS). This paper discusses the method of detecting leukemia. Various image processing techniques are use foe detecting red blood cells and immature white blood cells. The main objective is to detect leukemia affected cells and to count it. By detecting immature blast cell leukemia can be identified and define either it is acute or chronic. They employs various method to detect immature blast cells like linear contrast stretching, histogram equalization , and some morphological techniques like area opening and closing, erosion and dilation method.

III. CONCLUSION

Through the use of a various image processing techniques, the platelet count of microscopic blood smear images are obtained and combined with an analysis of the symptoms present in the patient. Most of the papers followed the same steps i.e., pre-processing, segmentation, feature extraction and classification for dengue fever detection. To detect leukaemia at earlier stage, support vector machine is used mostly for classification and Otsu's thresholding algorithm for segmentation. Fill hole operations are used to obtain the edge of the cancerous blood cells and SVM classifier tells automatically whether image has leukemia effected cells or not. In this paper, the main point of concern is to detect blood cells is more important to evaluate and diagnosis the disease. Segmentation technique and morphological operation for platelets count to diagnose dengue fever. Ostu's method followed by filling of holes is used to detect leukemia cells.

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