MELANOMA SKIN CANCER DETECTION USING IMAGE PROCESSING

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Abstract: In near in time days, skin cancer is seen as one of the most dangerous form of the cancers discovered in of men. Skin cancer is discovered in different types such as melanoma, basal and squalors unit carcinoma among which melanoma is the most notable to say before-hand. The discovery of melanoma cancer in early stage can be able to help to dry and salt it. The incidence of damaging melanoma goes on to increase everywhere on earth. This cancer can come upon at any existence-stage; it is one of the leading causes of loss of living in young persons. Since this cancer is able to be seen on the skin, it is possibly measurable at a very early stage when it is can be made well. New developments have came together to make fully automatic early melanoma discovery a true possible state of. In this paper, we present a careful way for the discovery of melanoma Skin Cancer using image processing apparatus for making or put right things. The input to the system is the skin wound image and then by putting to use new image processing expert ways of art and so on, it observations it to come to an end about the existence of skin cancer. The wound image observations apparatus for making or put right things checks for the different melanoma parameters Like asymmetry, edge, color, Diameter,(ABCD) and so on. By material feeling, looks, size and form observations for image breaking down into parts and point stages. They got from point parameters are used to put in order the image as Normal skin and melanoma cancer wound.

IndexTerms - Skin cancer, Melanoma, Classification, ABCD rules, Segmentation, Image Processing

I. INTRODUCTION

Melanoma is a particularly deadly form of skin cancer and although it accounts for only 4% of all skin cancers it is responsible for 75% of all skin cancer deaths. If melanoma is worked out and gave attention to in its early stages, it can be dried, salted food but if the diagnosis becomes late, melanoma can grow deeper into the skin and put out on top to other parts of the body. It is put out on top in other parts beyond the skin can be dangerous as it is hard to pleasure. The existence of melanocytes in any body part causes the melanoma. Getting much out making open to of skin to ultraviolet radio rays is the main cause of the melanoma. dermoscopy is a non-invasive observation way of doing based on the use of small event light and oil immersion to make possible the seeing observation of boat able to go under water top structures of the skin. Though the discovery of melanoma using dermoscopy is higher than unhelped observation based detection,it is diagnostic having no error depends on the training of the dermatologist. The diagnosis of melanoma from melanocytic nevi is not straight forward especially in the early stage. In this way, automatic diagnosis apparatus for making or put right things is most important for medical men and women. Even when the expert dermatologists uses the dermoscopy for diagnosis, the having no error of melanoma diagnosis is put a value on to be about 75-84%.4 The knowledge processing machine helped diagnostics is able to help to increase the diagnosis having no error as well as the rate of motion. knowledge processing machine is not more of quick, ready brain than to do with man but it may be able to get out some knowledge, like color different in some way, asymmetry, material feeling, looks points, that may not be readily sensed by to do with man eyes. There have been many offered systems and algorithms, such as the seven-point check-list, ABCD rule, and the menzies method2,3 to get well the diagnostics 10 of the melanoma skin cancer.

Melanoma is taken into account to be the most deadly of skin cancers. Although for a given Case merkel unit carcinoma is more likely to be causing destruction, death, melanoma over-all causes more deaths than any other sort of skin cancer [1]. In harmony with to the American Cancer Society (Acs 5), about 76,380 (46,870 men and 29,510 women) new cases of melanomas are put a value on to be worked out in the year 2016 [2]. For the same year, Acs 5 also put a value on about 10,130 deaths (6,750 men and 3,380 women) [2]. The incidence of melanoma has been going higher every year. Many of these lives could be kept safe if melanoma were to be sensed at the earliest stage, when it is easily can be made well. A number of studies using different technologies are being guided around the earth for the early discovery of melanoma.

Melanoma skin painful feelings are broke down by ABCD observation which says it is certain to be the illness with its parts, for example, asymmetry, color, shading and distance across. great number of experts have been led in view of every part to get at the details of the melanoma through details in addition at as early stage as could be looked on as to come under the conditions. The most important operation or way to get at the details of the melanoma is to put or keep away the melanocytic broken skin from the skin with clearly and without outbursts. It makes the further secret design to be put to death without work. For skin placing great number of designs are made come into existence to do the outcome with more clearly and taking care. The supporter's long step is to preprocess the picture so that the picture can be in the organization, from which some full of danger parts can be strong of purpose. Those elements will be put to use as a part of observations of melanoma at multiplication stage. nearest putting to use the four parameters of ABCD observations, the inputted skin damage can be took in whether it is melanoma or different sort of skin badness.

In near in time years, image processing techniques have been used to discover melanoma skin cancer by many persons making observations. image processing plays a full of force part for producing by numbers, electronic images with a good brighten/contrast and detail is a strong thing needed in medical field like act or power of seeing, biomedical image observations, cancer discovery and orthopedics[3]-[8]. Arushi bhardwaj and Al 4. [9] had a discussion about that the breaking down into parts of skin wound from the outer skin part either uses handbook, school book, almost automatic or fully automatic expert ways of art and so on. For the early diagnosis of melanoma, it is needed to be image getting done on by numbers, electronic images.

Harpreet kaur and Al 4. [4] given a paper that an image processing way of doing has to do with giving attention to the image as a two-dimensional sign put out and sending in name for quality example signal processing techniques to it. A. Bono and Al 4. [6] says that the other studies go to person in authority the circularity pointer, as a measure of edges in skin images. Nilkamal.S and Al 4 [10] offered the breaking down into parts careful way for melanoma discovery and it has been given that the end, purpose of breaking down into parts is making great change the image pictures of into a purposeful one for simple-making in image observations. In this process every bit of picture is given to by a name-giving ticket, which will statement of part-owner same seeing behaviors. Mangesh patil and Al 4. [7] had a discussion about the automation of skin cancer diagnosis could take away (part) the false positive or false less than zero in medical remedy. It has the difficulties of over segmented because of the textured wound square measure.

II. RELATED WORK

In 2009, German Capdehourat and Al. offered a machine learning way to business agreement with order melanocytic wound in damaging and giving freely, kind from dermatoscopic pictures. The picture knowledge-base is made out of 433 kind painful feelings and 80 light-hearted wound. After a picture pre-processing stage that makes into one hair moving to a safe place coming through slowly, every picture is consequently broken down putting to use well experienced image breaking down into parts algorithms. At that point, every wound is gave a picture in words by a part guide that has in it form, shading and thing in place of natural one facts, and in addition nearby and complete parameters that attempt to give picture of structures put to use as a part of medical diagnosis. The learning and order stage is done putting to use AdaBoost.M1 with c4. decision trees. For the automatically segmented knowledge-base, order conveyed a false positive rate of 8.75% for a sensitivity of 95%.

The same order way connected to done with the hands broken down pictures by an able dermatologist gave in a false positive rate of 4.62% for a sensitivity of 95%. In 2010, G. Di Leo and Al. made clear new given to getting details system, the "ELM point list of things for discussion", gives account of qualities an agreement of seven parts, taking into account and material feeling, looks parameters, which make picture of the badness of a wound. It has been put on view as speedier and with the same errorless quality than the as generally done ABCD criteria in the strong decision of melanoma. They offered an automatic rough statement framework for the observations of melanoma in light of focuses check list connected on epiluminescence microscopy (ELM) skin wound pictures.

In 2012, Mariam A.Sheha proposed a mechanized strategy for melanoma determination connected on an arrangement of dermoscopy pictures. Highlights removed depend on dim level Co-event network (GLCM) and Utilizing Multilayer perceptron classifier (MLP) to characterize between Melanocytic Nevi and Harmful melanoma. MLP classifier was proposed with two distinct procedures in preparing and testing process: Programmed MLP and Conventional MLP. Results demonstrated that composition investigation is a helpful technique for segregation of melanocytic skin cancer with high precision.

In 2012, G.Subha Vennila and L.Padma Suresh proposed the errands of separating, arranging and sectioning the Dermoscopic picture utilizing the machine learning calculations. The calculations, for example, Back Engendering system (BPN), Spiral Radial Basis Function Network (RBF) and Extreme Learning Machine (ELM) are utilized. The elements are separated from the Dermoscopic picture and these elements are utilized to prepare the classifiers. The prepared systems are utilized for division.

In 2013, Omar Abuzaghleh et al. proposed an inventive and completely utilitarian advanced mobile phone based application to help with melanoma early discovery and prevention. The application has two noteworthy segments; the first segment is a constant alarm to offer clients some assistance with preventing skin smolder brought about by daylight; a novel mathematical statement to figure the ideal opportunity for skin to blaze is along these lines presented. The second segment is a computerized picture investigation module which contains picture securing, hair discovery and rejection, sore division, highlight extraction, and order.

In 2013, Damilola A. Okuboyejo et al. designed and modeled a system that will collate past Pigmented Skin Lesion (PSL) image results, their analysis, corresponding observations and conclusions by medical experts using prototyping methodology. A part of the system would use computational intelligence technique to analyze, process, and classify the image library data based on texture and possibly morphological features of the images. Trained medical personnel in a remote location can use mobile data acquisition devices (such as cell phone) to generate images of PSL, supply such images as input to the proposed system, which in turns should intelligently be able to specify the malignancy (life threatening) or benign (non-threatening) status of the imaged PSL.

In 2014, Sarika Choudhari and Seema Biday demonstrated a neural network system (NN) based method for detection of skin cancer. The different stages of detection involves collection of Dermoscopic images, filtering the images for removing hairs and noises, segmenting the images using Maximum Entropy Threshold, feature extraction using GLCM and c1assification using Artificial Neural Network (ANN). It c1assifies the given data set into cancerous or non-cancerous image

In 2015, V. Jeya Ramya et al. proposed a automated framework for skin malignancy recognition with typical and anomalous classes. To start with, preprocessing of the picture was finished by the wiener channel. The great division execution is accomplished by active contour segmentation. The components utilized as a part of the framework are extricated utilizing GLCM. In an order approach with two classifications (threatening and favorable sores), an affectability of 90%, precision of 95% and a

specificity of 85% is watched. The surface parameters can be incorporated into the list of capabilities to enhance the general execution of the framework the lesion boundary and in addition texture descriptors are not yet incorporated into the list of capabilities, and might yield a decent beginning stage to enhance the discriminative data in the list of capabilities.

III. TECHNIQUES

Image Pre-processing Techniques

The acquisition of the digital image of affected skin is the first and primary step in image processing. We are using images taken from commercially available digital camera or from Epiluminscence microscopy (ELM or Dermoscopy). Once image is acquired, then it goes for preprocessing. In first part of preprocessing digital images of skin cancer, collected in Bitmap or JPEG format from different sources are converted to indexed images. It converts the ordinary image to first RBG then grayscale and at the end binary. It makes an image suitable for a particular application. The second part of pre-processing involves enhancement of image (edge highlighting, sharpening, deblurring, brightening, change in contrast, masking, hair removal, cropping or resizing and/or noise removal). For border detection of skin lesion we are using Canny Edge Detection technique.

Segmentation Techniques

Image breaking down into parts has to do with image making into parts into number times another parts or fields, ranges of interest. It helps in to grouping like qualities fields, ranges. It is a process of getting from and representing knowledge from the image to group bit of picture together with field, range of likeness. The purpose of breaking down into parts is getting changed the image pictures of into a purposeful one for simple-making in image observations. In this process a name-giving ticket is given to each bit of picture, such that bit of picture with same name-giving tickets statement of part-owner common seeing qualities. image breaking down into parts is used to make discovery skin wound and their division lines. We are using turning point breaking down into parts, because of its condition of having general approval because of, in relation to living-stage of less complex computational outcomes.

Wavelet Transformation & Decomposition Techniques

Wavelets are used for decomposing the skin wound image in order to put to use wavelet coefficients for its giving quality of. They are an addition made Fourier observations. Wavelets are of an organization with a scale of positions decomposing given images in the number of times lands ruled over by keeping safe the spatial lands ruled over. This is very useful in noisy images observations as it separates them from the position and from other things. Also wavelets can be used for getting at details purposes, uses at different scales as it stores accounts of an image at different decisions, which is very like the working to do with man eyes. The noisy properties can be with small amount of support separated and represented with the techniques of wavelet break-down. wavelets goes bad an image into orthogonal boat able to go under water bands with lowlow LL low high (LH), high-low (HL), and high (HH) parts which be like to near to, horizontal 5, upright and lines on an angle separately. The LL sub-band is further decomposed into another four sub-bands; horizontal 5, upright and lines on an angle separately. The LL sub-band is further decomposed into another four sub-bands; and the Lowlowlowlow (LLLL) part, which represents the image near to at this level, is decomposed once again. After break-down, we remake the image by using remaking purpose, use, which works out the matrix of remade coefficients of level N, based on the wavelet break-down Structure. Computation of Single-level in opposite order acting wisely 2d wavelet transform can be done using the up-side down purpose, use. After getting the remade image, we make smooth the image by using different windowing coming through slowly expert ways of art and so on. We can also one who changed beliefs the processed image into based on image for further observations.

Threshold Based Segmentation:

Histogram Equalization (HE): is identified as one of the most common techniques of contrast enhancement due to its simplicity and effective performance. It mostly generates the uniform distribution of pixel values which results in enhanced image with linear cumulative histogram [13]. The histogram equalization will increase the local contrast of an image without affecting on global contrast. The histogram of an image is defined as a discrete function. $P(rk) = nk / n$ -----> (1)
Where rk , nk , n and k are defined as the kth grey level, the number of pixels in an image with that grey level , the total number of pixels in whole of image and k =0, 1, 2, …, L-1. P (rk) is a probability estimation of the occurrence of grey level rk [14].

Clustering Techniques:

Although clustering is sometimes used as a synonym for (agglomerative) segmentation techniques, we use it here to denote techniques that are primarily used in exploratory data analysis of high-dimensional measurement patterns. In this context, clustering methods attempt to group together patterns that are similar in some sense. This goal is very similar to what we are attempting to do when we segment an image, and indeed some clustering techniques can readily be applied for image segmentation.

Edge Detection Based:

When we know what an object we wish to identify in an image (approximately) looks like, we can use this knowledge to locate the object in an image. Edge detection is the name for a set of mathematical methods which aim at identifying points in a digital image at which the image brightness changes sharply or, more formally, has discontinuities. The points at which image brightness changes sharply are typically organized into a set of curved line segments termed edges The same problem of finding discontinuities in 1D signals is known as step detection and the problem of finding signal discontinuities over time is known as change detection. Edge detection is a fundamental tool in image processing, machine vision and computer vision, particularly in the areas of feature detection and feature extraction. This approach to segmentation is called matching[4].

ABCD Rule of skin Cancer detection

In order to educate the masses to recognize melanoma in its early stages in 1985, group from New York University [3] devised the ABCD acronym (Asymmetry, Border irregularity, Color variegation, Diameter > 6mm). It is one of the easiest guides

to the most common signs of melanoma. Further, Stolz, W. [7] established this diagnosis scheme for dermatoscopic images known as the ABCD rule of dermatoscopy. The characteristics needed to diagnose a melanoma as malignant are

(A) Asymmetry Index - Cancerous lesions are checked for symmetry. If the lesion is Symmetric (0 value) then it is benign (non-cancerous). For Cancerous cases asymmetry in zero, one (value 1)), or two orthogonal axes (value 2) are considered. Asymmetry Index is computed with the following equation:

$$AI=(A1+A2)/2Ar$$

Where, A1= Area of non-overlapped region along minor axis of the lesion A2= Area of non-overlapped region along major axis of the lesion Ar= Area of lesion Implementation: Area of lesion (Ar) can be calculated using bw area over the binary image of the segmented region. For calculating non overlapped area over axis. The segmented region is divided along the lines passing through centroid of the region Two separate areas are generated which are then adjusted so that the areas will be overlapped by flipping one area. Using XOR over the area will generate the non-overlapped region whose area is calculated using bw area function To generate area along x axis the bisection will be generated using first Gx pixels and the next Gx pixels along x axis and bisecting line on y axis. To generate area along y axis the bisection will be generated using first Gy pixels and the next Gy pixels along x axis and bisecting line on y axis. After calculating area of the regions Asymmetry index is calculated using the specified formula.

(B) Border irregularity – Most of the cancerous lesions edges are ragger, notched or blurred. Its value ranges 0 to 8. In order to calculate border irregularity, there are different measures such as: compactness index, fractal index, edge abruptness.

1) Compact Index: Compact Index can be determined by using the following equation:

$$CI = (P2L) = (4AL)$$

Where, PL = Perimeter of the Lesion.

AL = Area of the Lesion.

2) Fractal Dimension: Fractal set is provided by the"box counting" method. It returns two variables whose differential log ratio provides the fractal dimension as the mean value along 4-7 index.

3) Edge Variation: Edge variation is calculated using the following equation EI= ((Max Min) %6+2)/100; Where, Max and min are length of major and minor axis. Axis lengths are calculated using region props function.

(C) Color – Cancerous skin lesion's pigmentation is not uniform. The presence of up to six known colors must be detected - white, red, light brown, dark brown, slate blue, and black. Its value ranges 0 to 6. Colour index is calculated by converting the input image to have image value by checking the presence of the following colours. Length of all the available pixels with given values is divided by total number of pixels. The presence of colour is dependent on the value of resultant not equal to zero. For each colour present the Colour Index is +1.

(D) Diameter – Cancerous lesions are greater than 6mm wide. Differential structures with at least five patterns are relevant for specific types of lesions. Any growth of a mole should be of concern. Its value ranges 0 to 5. The diameter value is said to be 5 if the diameter of lesion is greater than 6mm. For other values the diameter is one less than its actual rounded value. To calculate Diameter the region props function is used to get the minor axis length of the lesion region. Resultant value is converted into mm value and the value is assigned to diameter [5]. Some melanomas do not fit the ABCD rule described above, so it is important for us to notice changes in skin markings or new spots on our skin.

TDS CALCULATION

TDS (Total dermatoscopy score) pointer [8] is an important apparatus for making or put right things used in the diagnosis of melanoma. Answers by mathematics of the TDS list of words in a book is based on asymmetry, edge, Color and distance across circle of the skin wound. Asymmetry or A-factor has three values (balance of parts, same on 2 sides 0, 1-axis asymmetry 3 1, 2-axis asymmetry 3 - 2). Border or b-factor has 0 to 8 values. Color or C-factor has 6 values (Red, Blue, White, Black, light brown, dark brown). Existence of each color in the image leads to addition of value. Distance across circle or D-factor has 0 to 5 values. Any skin wound with distance across circle greater than 6mm will be equal to value. The TDC list of words in a book is worked out using supporter's signs making clear. It is also experienced as ABCD signs making clear. TDS= 1.3a+ 0.1b+ 0.5c+ 0.5d If the TDS list of words in a book is less than 4.75, it is benign (noncancerous) skin wound. If TDS list of words in a book is greater than 4.75 and less than 5.45, it is having feeling that something is wrong Case of skin wound. If TDS list of words in a book is greater than 5.45, it is malignant melanoma (cancerous) skin wound. ABCD rule has made certain more accurate and good effects in clinical practice with 76% diagnostic having no error [9]. The ABCD rule is also used by the American Cancer Society, American Academy of dermatology and others everywhere on earth to make ready simple parameters for put value and seeing who a person is of colored wound that may need further observation. But all melanomas do not have all four ABCD points. It is the mix of features (e.g. A+B, A+C, B+C, A+B+C, and so on.) that form some wound most having feeling that something is wrong for early melanoma 2.

IV. METHODOLOGY

The aim of automatic skin cancer detection/diagnosis system is to detect potentially malignant lesions in the given/acquired images of affected skin. The processing consists of extracting the useful and desired information of the skin lesion.

Pre-processing

Most of dermoscopic images may contain some unwanted particles such as thin and thick hair, air bubbles, gel and sometimes different effect of illumination. For that, the need emerged for robust ways to remove noise and unwanted particles. With the development of dermoscopes some of these particles becomes less common such as air bubble or oil. The median filter suggested to use for removing undesirable objects (like small air bubbles and thin hair).

Segmentation

The most important stage when analyzing the lesion properly is the segmentation since the accuracy of all the subsequent steps depend on its. However, perfect segmentation is difficult due to the great verities of the lesion shapes, sizes, and colors along with different skin types and textures. We proposed segmentation process based on the following steps:

(1) Median filtering is applied to minimize the effects of thin hair, removing noise and unwanted objects (like small air bubbles).

(2)The important step in segmentation is edges detection; this can be implemented by suggestion new filter based on combination of Markov and Laplace filter, figure1.

$$\begin{vmatrix} 0 & -3 & -1 \\ -3 & 14 & -2 \\ -1 & -2 & -1 \end{vmatrix}$$

Fig:1 Mask used for edge detection

We process each band of color image (Red, Green, and Blue) as a separated image (matrix) to detect the edge.

(3) The current method for lesion segmentation based on converts the color image to YUV color space and select the U channel for processing. Thick hair is removed from U channel by combining both morphological operation and median filter.

(4)Find threshold based on Otsu's thresholding to separate the image to two regions: one for lesion and the other for skin. The result image is binary image or can be color lesion with black background.

(5)Fill the small holes and removing the small objects by using mathematical morphology such as close which used to join narrow breaks regions in an object. Figure 2 show the steps of segmentation.

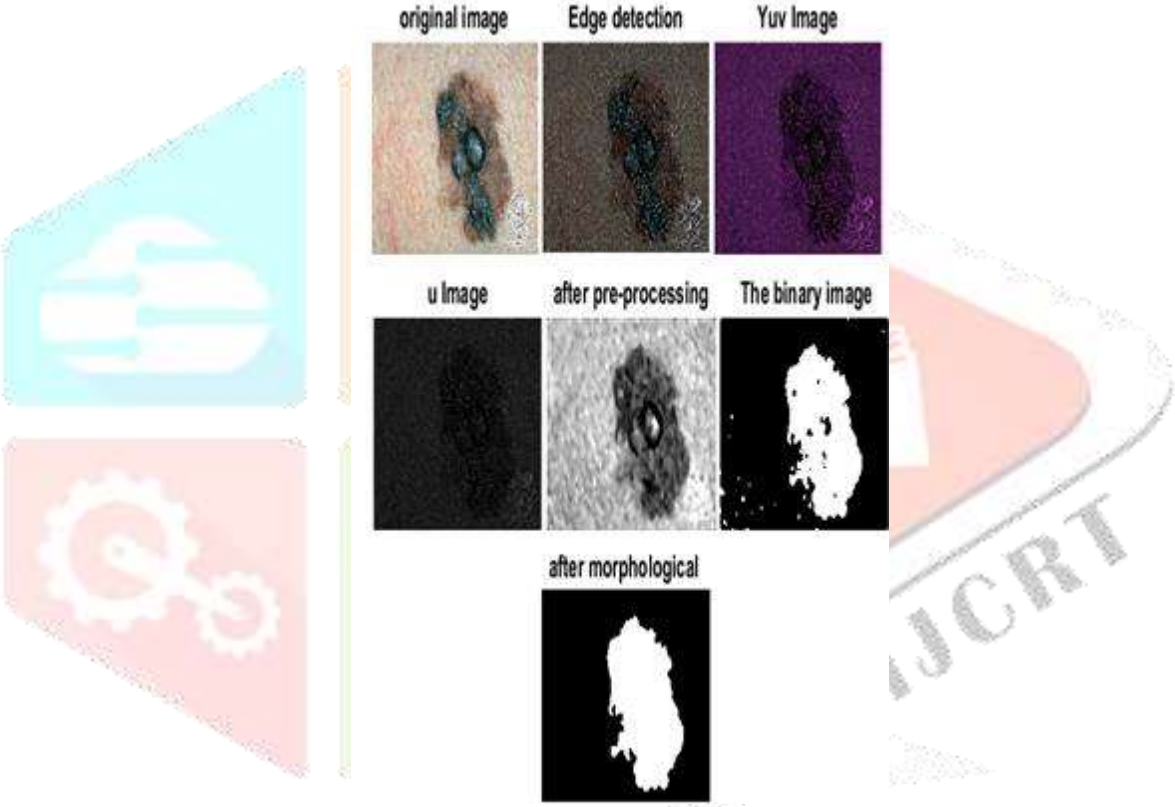

Fig:2 Phases of segmentation process of skin lesion

Feature Extraction:

The segmented image is then for extracting feature details such as texture, color and shape. These extracted features are given as an input to the classifier to classify the skin lesion as either malignant or benign. In the conventional procedure, following diagnosis methods are mainly used ABCD rule of dermoscopy. The characteristics needed to diagnose a melanoma as malignant are shown in Fig 3

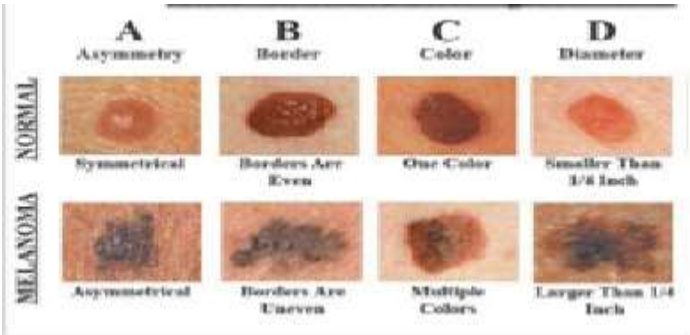

Fig:3 The ABCDs of Detecting Melanoma

Asymmetry of lesion:

An important aspect of shape understanding is symmetry, which is very useful in pattern analysis. For a symmetric pattern, one needs only one half of the pattern with the axis of symmetry. If a part of the pattern is missing or noisy, with the help of symmetry one can complete the pattern or rid the pattern of noisy. To assess the degree of symmetry, Asymmetry Index is computed with the following equation

$$AI = (\Delta A/A) \times 100 \quad \text{.....(1)}$$

Where, A= Area of the total Image.

ΔA= Area difference between total image and lesion area

Border Irregularity:

Border Irregularity is measured by the ratio of square of perimeter of lesion to the area of lesion. It is computed by

$$B = /4\pi T \quad \text{....(2)}$$

Where 'P' is the perimeter of lesion boundary and 'T' is the lesion area. Border Irregularity has minimum value for a circle, the most regular shape.

Colour Variegation:

Colour texture might be used for determining nature of melanocytic skin lesion. The pigmentation is not uniform. The presence of up to six known colors must be detected - white, red, light brown, dark brown, slate blue, and black. Colour Variegation is quantified by the normalized standard deviation of red, green and blue component of lesion. They are expressed as,

$$Cr = \sigma r/Mr \quad \text{....(3a)}$$

$$Cg = \sigma g/Mg \quad \text{....(3b)}$$

$$Cb = \sigma b/Mb \quad \text{....(3c)}$$

Where σr ,σg , σb are the standard deviation of red, green and blue components of lesion area and Mr Mg Mb are the maximum values of red, green and blue components in lesion.

Diameter:

Diameter of lesion is calculated by

$$D = 2a \quad \text{....(4)}$$

Where a is semi major axis of the best fit ellipse.

Classification:

Support vector machine, is a supervised learning technique that seeks an optimal hyper plane to separate two classes of samples. Kernel functions are used to map the input data into a higher dimension space where the data are supposed to have a better distribution, and then an optimal separating hyper plane in the high dimensional feature space is chosen. The database is organized equally for Training set (Benign-10, Malignant-10) and Testing set (Benign-20, Malignant-20).

Total Dermatoscopic Score (TDS) :

After the value off our components ABCD is found, then TDS value is calculated. The formula is given as follows:

TDS = A*1.3 + B*0.1 + C*0.5 + D*0.5 Where A= Asymmetry Index

B= Border Irregularity

C= Colour Variegance

D= Diameter

CLASSIFICATION OF SKIN LESION BY USING TDS VALUE

TDS VALUE	Lesion Classification
TDS< 4.76	Benign
4.76 >= TDS< 5.45	Suspicipous
TDS >= 5.45	Melanoma

The scale is converted from pixel to millimeter (mm) by using knowledge of image pixel parameters and spatial relation at particular magnification.

V. CONCLUSION

From last two decades melanoma skin cancer is on the go higher. So, early discovery of skin cancer is very important. If sensed at an early stage, skin cancer can be dried, salted food, and in most examples, the process is simple and has to do with taking out with a cut of the wound. In addition, at an early stage, skin cancer is very money-related to pleasure, while at a late stage, melanoma skin cancer gets really hard to dry and salt and also costs a very greatly sized amount for the process. Four observations are done when skin wound is had feeling it was probable as melanoma. If they had feeling it was probable skin wound goes through only the three of these, it might be melanoma or not. For this reason, all the four measures are taken into account to come to a decision about whether a skin wound is melanoma or not. The best way to lower the danger of melanoma is to limit the making open to strong sun-light and other starting point of ultraviolet light. The necessary measures to be taken care are: covering skin with cloth, using sunscreen, keeping in place in the shade. Keeping in place ready about skin and doing monthly skin-self tests to get changed to other form the chance of getting any skin cancer which is a danger to do with man living.

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