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SKIN DISEASE OBSERVATION USING ML

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Abstract: Dermis problems are dangerous and often contagious, especially melanoma, eczema, and impetigo. These skin diseases can be cured if detected early. The basic problem with it, only a dermatologist can diagnose such a disease. At times, doctors also fail miserably to properly diagnose the disease and thus give the wrong medication to the patient. Our paper proposes a way to diagnose skin disease based on Image Processing and Deep Learning Strategies. Our system is based on mobile phones so it can be used even in remote areas. I the patient needs to provide a picture of the infected area and is provided as an input application. Graphic Processing and In-depth Learning Strategies process us and bring us the most accurate output. In this paper, we present a comparison of two different real-time skin diseases to find an algorithm based on accuracy. We compared the Navies Bias Classifier. Results for real-time testing is introduced.

Index Terms - Skin disease, feature extraction, pre-processing, HOG, machine learning algorithms.

1.INTRODUCTION

The largest organ is the human skin. The inside of the body is separated by the outer skin nature. Provides protection from fungal infections, viruses, allergies. Conditions that irritate or damage the skin produces symptoms such as swelling, burning, redness and itching. The skin can also produce many types of cancer. Image processing is used to diagnose these diseases using various methods such as classification, filtering, factor background etc. Getting an improved image or getting a better idea of the image, of course it is necessary to convert the image to a digital format and perform tasks on that image. It is a part of signal processing. Input is an image and may be video, image and output and another image with the same features as the input image.

The Image Processing Models take input samples as 2-D signals and then apply the focused signal processing methods to see. It is a new field of research within the science of computer and computer science. Scope of skin diseases very wide. Diagnosis depends on a number of factors, such as what parameters the disease is considered adoption. To separate, a Vector Support Machine (SVM) is used. On the other hand, it is deep learning algorithms have the ability to manage large complex databases and therefore, Naïve Bayesian and Support Vector Machine (SVM) are also used as part of the research location to find the affected area of skin.

2.RELATED WORK

Basically the diagnosis of dermatitis depends on the exception features such as color, shape, texture etc. there is no acceptable treatment for skin diseases Different doctors will treat the same symptoms differently. A key factor in the treatment of skin diseases early detection of additional reliable treatment for early detection. In this paper, the proposed plan used for the diagnosis of many skin diseases is used to analyze the statistical parameter. Statistically analysis is concerned with random data analysis. Random data pattern for skin diseases.

2.1 LIETRATURE SURVEY

- *Classification of Skin diseases using Image processing and SVM N Vikranth Kumar; P Vijeeth Kumar; K Pramodh; Yepuganti Karuna IEEE 2019*

Skin diseases such as Melanoma and Carcinoma are often quite hard to detect at an early stage and it is even harder to classify them separately. Recently, it is well known that, the most dangerous form of skin cancer among the other types of skin cancer is melanoma because it is much more likely to spread to other parts of the body if not diagnosed and treated early. In order to classify these skin diseases, "Support Vector Machine (SVM)" a Machine Learning Algorithm can be used. In this paper, we propose a method to identify whether a given sample is affected with Melanoma or not. The steps involved in this study are collecting labelled data of images that are pre-processed,

flattening those images and getting the pixel intensities of images into an array, appending all such arrays into a database, training the SVM with labelled data using a suitable kernel, and using the trained data to classify the samples successfully. The results show that the achieved accuracy of classification is about 90%.

- *Skin Disease detection based on different Segmentation Techniques Kyamelia Roy; Sheli Sinha Chaudhuri; Sanjana Ghosh; Swarna Kamal Dutta; Proggya Chakraborthy IEEE 2019*
  The outer integument of the human body is skin. The skin pigmentation of human beings varies from person to person and human skin type can be dry, oily, or combination. Such a variety in the human skin provides a diversified habitat for bacteria and other microorganisms. Melanocytes in the human skin, produces melanin which can absorb harmful ultraviolet radiation from sunlight which can damage the skin and result in skin cancer. The necessary tools needed for early detection of these diseases are still not a reality in most third world communities. If the symptoms of skin diseases such as acne, dermatomyositis, candidiasis, cellulitis, Scleroderma, chicken pox, ringworm, eczema, psoriasis, etc. are left untreated in its early stage then they can result in numerous health complications and even death. Image segmentation is a technique which aids with the detection of these skin diseases. In this paper, image processing techniques like adaptive thresholding, edge detection, K-means clustering and morphology-based image segmentation have been used to identify the skin diseases from the given image set. The acquired image set was pre-processed by deblurring, noise reduction and then processed. Depending on the definite pattern (pertaining to a distinct disease) present in the processed image the disease is detected at the output for a corresponding input image.

- *Automatic Classification of Clinical Skin Disease Images with Additional High-Level Position Information Jingyi Li; Zijian Guo; Dong Li; Xiaorui Hu; Yun Zhang IEEE 2020*

  In this paper, we propose an SD-198-P dataset, which includes additional high-level position information in the SD-198 dataset to guide the generation of better deep visual features. Our experiment shows that, after adding the position information, the performance of deep visual features is better than that of hand-crafted features. To the best of our knowledge, our method outperforms the current state-of-the-art clinical skin disease classification methods.

- *IEEE 2021 Soumya Sourav, Department of Electrical Engineering, Delhi Technological University*
  Dermatological Diseases are one of the biggest medical issues in 21st century due to it's highly complex and expensive diagnosis with difficulties and subjectivity of human interpretation. In cases of fatal diseases like Melanoma diagnosis in early stages play a vital role in determining the probability of getting cured? We believe that the application of automated methods will help in early diagnosis especially with the set of images with variety of diagnosis. Hence, in this article we present a completely automated system of dermatological disease recognition through lesion images, a machine intervention in contrast to conventional medical personnel based detection. Our model is designed into three phases compromising of data collection and augmentation, designing model and finally prediction. We have used multiple AI algorithms like Convolution Neural Network and Support Vector Machine and amalgamated it with image processing tools to form a better structure, leading to higher accuracy.

2.2 Contribution

This article presents images for diagnosing some skin diseases using Statistical Parameter Analysis. Statistical analysis deals with the analysis of random data. This system is a model Combo intended to be used for simultaneous diagnosis of several skin diseases. The target skin diseases are melanoma and nevus. Disease diagnosis and classification is based on statistical parameter analysis. Statistical parameters include entropy, texture index, standard deviation, and correlation facts. According to the standard range of parameters, skin diseases are diagnosed and are classified.

Multiple skin problems are diagnosed with the help of statistical parameter analysis. Statistical analysis is something which is related to the analyzing of random data. This is designed in such a way that it diagnoses couple of images at a time. Some of the target diseases are Melanoma and Nevus.

The parameters required for statistical analysis is

- Entropy
- Texture Index
- Standard deviation
- Correlation fact

3.PROBLEM STATEMENT

Physicians usually assume diagnostic opinions, which probably begin by looking for further evidence that their assumptions can be verified, and if not, they will miss another potential diagnosis. Bias basically affects the analysis by medical professionals. is the same as a human search that starts with a keyword selected by the user. In addition, if doctors start looking for symptoms, that may be true, but if there may actually be symptoms, one order of symptoms or weighting is a bias associated with -related diagnosis. May lead to. This is not included in the search or search because we have not received any credits.

3.ALGORITHM

3.1 Naïve bayes algorithm

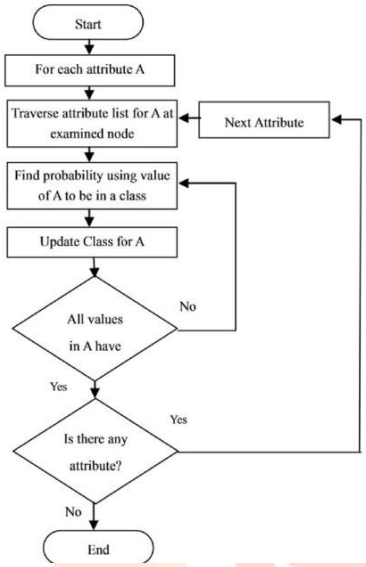
Step: 1. Read the training dataset T

Step: 2. Calculate the mean standard deviation of the predictors for each class.

Step: 3. Repeatedly calculate the probability of fi using the Gaussian density equations of each class. Until the probabilities of all predictors (ft, f2, f3, ..., fn) are calculated

Step: 4. Calculate the probabilities for each class.

Step: 5. Find the maximum probability.



3.2 MATHEMATICAL EQUATIONS

The MAP for hypothesis is :

MAP(H) = max(P(H|E))

MAP(H) = max((P(E|H)*P(H))/P(E))

MAP(H) = max(P(E|H)*P(H)) P(E)

4. WORKING

The full flow of the proposed route is shown in Fig.1. Naïve Bayes performance is analyzed using a matrix element.

In addition, HOG's performance is studied on various factors like accuracy, sensitivity and clear values. The process of flow of skin diseases image preprocessing is shown below

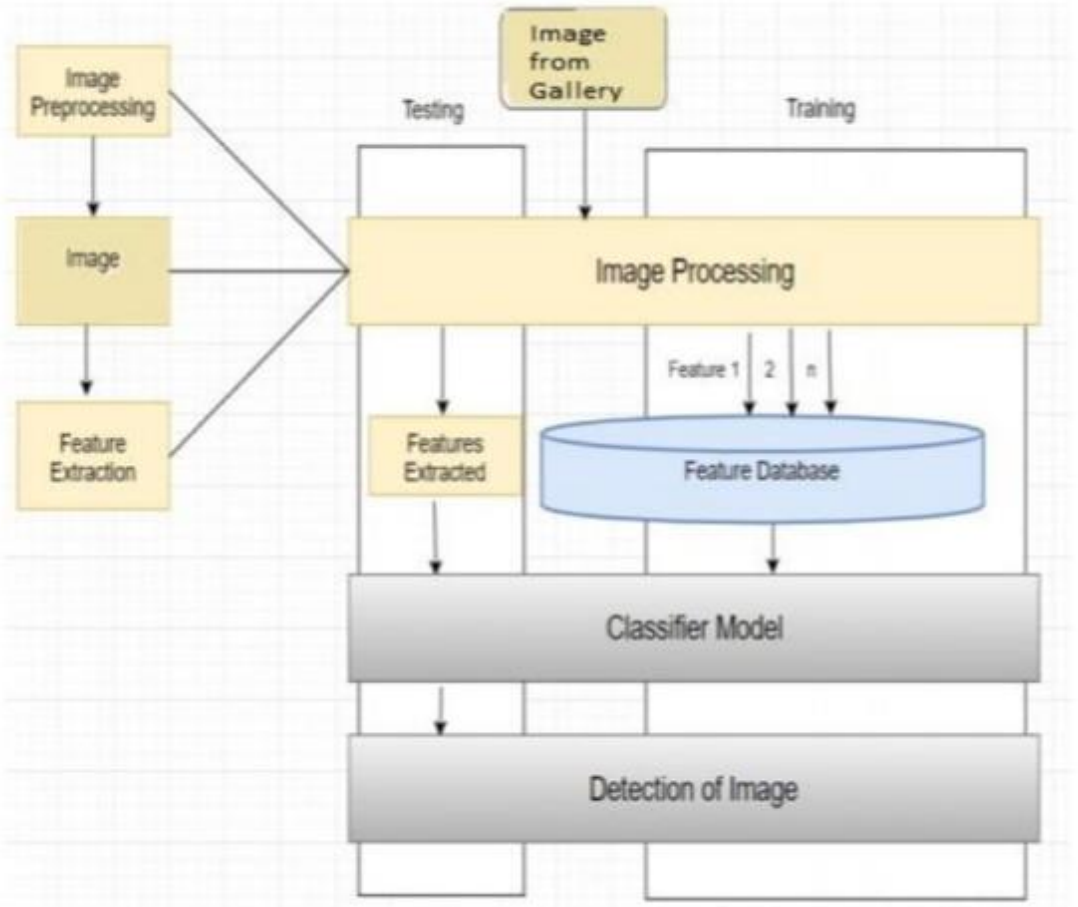


Fig – 1 Working of Image preprocessing

5. SYSTEM DESIGN

Pre-image processing is the first step in identifying the affected area. Many steps are performed in the pre-processing stage to make the image ready for the feature removal process. Image size can be changed in a number of ways. One of the easiest ways to increase image size is to interpret your nearest neighbor, instead of each pixel by a pixel close to the output; measuring this means that more pixels of the same color will be present. Retina images were taken on a fundus camera in RGB format (Red, Green, and Blue). Grayscale is a variety of shades of gray that are not visible in color. The use of a fundus camera to take pictures of the retina causes uneven light. The parts around the area are well lit so they look very bright. Adaptive Histogram Equalization Adaptive Histogram Equalization differs from standard histogram balances in that the dynamic method includes several histograms, each corresponding to a different part of the image, and using them to redistribute the light values of the image. The HOG removes the image features that exist on the grid of rectangular blocks in the search window. A histogram for each block is used to define the frequency of the credit directions within each block. The image

is usually defined by a set of local histograms. Here we use data without SVM labels. Geographical data based on hyperplane will be entered into different classes. In addition, the important thing to note is that SVM in Machine Learning is always using graphs to organize data**.**

5. OUTPUT

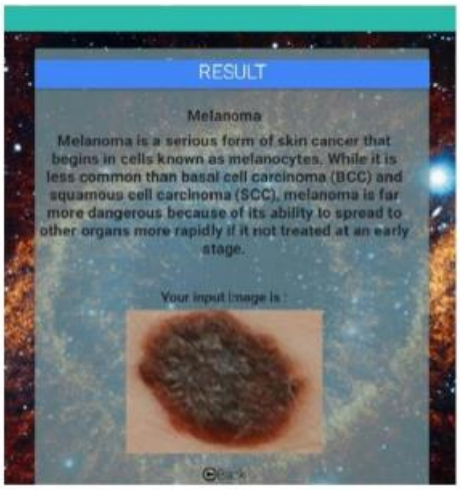
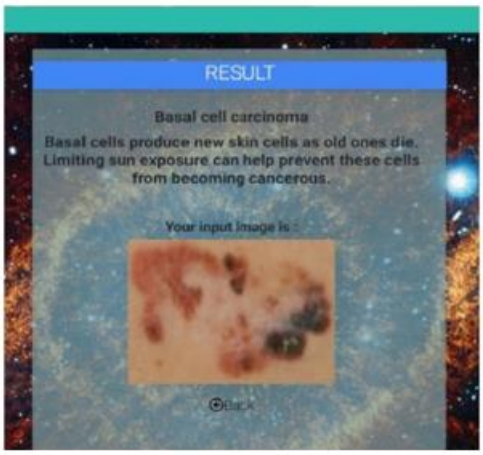
S.No	Output Image	Name of the Skin Problem
1.		**Melanoma skin cancer**
2.		**Nevus chronic lesion**
3.		**Basel cell carcinoma**

Table 1- Results

4.CONCLUSION

- Doctors usually start with a diagnostic report.
- Diagnostic opinions may begin to look for further evidence that those assumptions can be tested so as not to miss another potential diagnosis.
- Bias basically affects the analysis by medical professionals.
- This is the same as a human search that begins with a keyword selected by the user.
- It may be true when doctors start looking for symptoms, but if there are actual symptoms, the order or weighting of the symptoms is a bias associated with the associated diagnosis.

- It may be the cause.
- This is not included in the quest or survey as we have not received any credits.

4.1Scope of Future Research

1.A standard model should be adopted to diagnose all types of skin diseases

2.Increase the power of multiple platforms with the introduction of iOS integration.

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