Skin Disease Detection Using SVM Algorithm & Machine Learning.

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Abstract - Skin disease is common disease than other disease .some skin problems affect the skin. and some skin disease are normal .some skin disease are genetic but some skin disease are fungal infections. there are so many techniques available to detect the skin problems but they are so expensive .and some of the people can not afford it.   This work contributes in the research of skin disease detection. We proposed an image processing-and svm algorithm based method to detect skin diseases. This method takes the image of disease then use image analysis to identify the type of disease. Our proposed system is simple, fast and does not require expensive equipment other than a camera and a computer. first user will upload the image of the affected area of skin then our system will work on it will first resize the image and extract the features of image .and after that image will go for classification which is done by using SVM algorithm.   after that system will show the predictions to the user and. predict the name of the disease to the user. and it will show care to be taken for the skin.

*Key Words***:** image processing, Machine Learning, Support Vector Machine, Skin Detection.

1.INTRODUCTION :-

some skin disease are normal and some skin disease give major affect . some skin disease are infections and some of them are genetic. skin disease can convert into skin cancer also. skin disease problem can solve by the some other treatments but they are highly expensive treatments and not affordable for everyone.
we developed a system which can help others to detect skin disease .without any cost anyone can access it .we made one user friendly system which can handled by a person who is quite unknown to the digital world .

first of fall user has to upload the image of affected area of skin disease after that our system will work on that in the part of image processing image will resized first and after that image will go for feature extraction and after that svm algorithm will does it's work svm algorithm classify the image and identify which type of disease user have. and it will show the predictions to the user.

1.1 Software Requirement

- Python version 3.7.1 , Pycharm

- Flask

1.2 Hardware Requirements

- Intel® Core™ i7-10510U Processor

- 512GB HDD and minimum 4 GB RAM

2. LITERATURE SURVEY:-

[1] Cahyo Adhi Hartanto, Adi Wibowo, Department of Informatics Faculty of Sciences and Mathematics, Diponegoro University, Semarang, Indonesia, Development of Mobile Skin Cancer Detection using Faster R-CNN and Mobile Net v2 Model In this paper, two skin cancer types are use, Actinic Keratosis, and Melanoma. The first skin cancer type is triggered by ultraviolet (UV) radiation. The color properties of the Actinic Keratosis are pink, a brownish color or a compound of these colors . The Actinic Keratosis originating is shown in Fig.1. The second type of skin cancer is the most malignant skin cancer. Melanoma's case is identified to begin from two factors, i.e., UV light exposure and hereditary factors . The color properties of melanoma skin cancer consist of more than one color

[2] Kyamelia Roy, Sheli Sinha Chaudhuri, Sanjana Ghosh, Swarna Kamal Dutta, Proggya Chakraborty, Rudradeep Sarkar," Electronics and Communication Engineering ", University of Engineering & Management Newtown, Kolkata, West Bengal, India.
the methodology filtered with the de-noising filters begins with acquisition of the images followed by image processing and segmentation. In pre-processing, noise reduction is done by using average filter and the segmentation techniques used are - adaptive thresholding, edge detection, k-means clustering and morphology-based image segmentation.

[3] Alaa Haddad, Shihab A. Hameed," department of electrical and computer engineering, IIUM university KL, Malaysia",This paper will help people to know what are the required procedures for treatment of skin disease [2] by analyzing the image and extract useful information that help to show the infected skin area and classification of image based on the kind of skin disease, and show emergency medical services if it is possible and normal to reassure people.

[4] Archana Ajith1, Vrinda Goel1, Priyanka Vazirani1, Dr. M. Mani Roja2," Student, EXTC Thadomal Shahani Engineering College Mumbai, India. Digital Dermatology Skin Disease Detection Model This paper proposes a skin disease detection method based on image processing techniques. This method is mobile based and hence very accessible even in remote areas and it is completely noninvasive to patient's skin.

[5] Vinay shekhar, Bannihatti Kumar, Sujay S Kumar, varun saboo, Computer Science Department PES Institute of Technology," Dermatological Disease Detection Using Image Processing and Machine Learning" In this research paper, we provide an approach to detect various kinds of these diseases. We use a dual stage approach which effectively combines Computer Vision and Machine Learning on clinically evaluated histopathological attributes to accurately identify the disease.

3. Use Case Diagram:-

we explain it in very simple words .there are four phases in use case diagram.
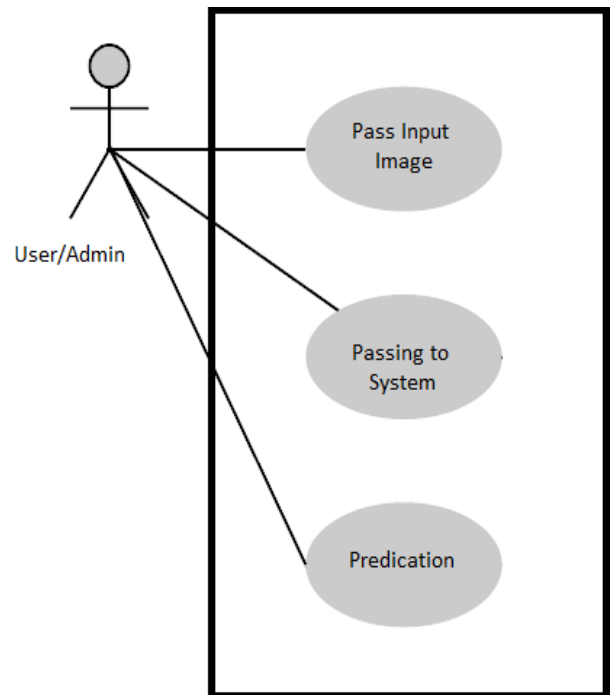- user will upload the image of affected skin on the system and he has to wait for some time.

fig:-1 use case diagram.

- after that image will pass to system for further processing. means for image resizing, filtering etc.
- after working on image system will predict the disease and display it to user and show the care to taken.

4. Proposed Work :-

in the proposed work we explained the block diagram of our proposed system.fig-2 shows the proposed block diagram.
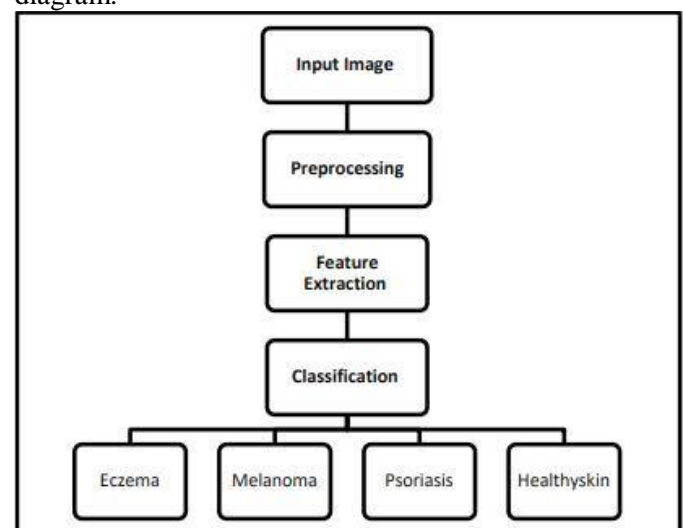

fig-2: proposed system block diagram

4.1. Preprocessing: for flexible performance of the system. we have to overcome some difficulties like making image dimensions unique. In the following section, how the image will resize is explained.

- *Image Resizing:* users has to upload the image of affected skin area on our site .for the flexible performance of the system we making all the images one size .the fig-3 shows the original size of the image which is uploaded by the user. and the fig-4shows the image which is resized.

fig-3:example of orignal image of disease.

fig-4:example of resizing image of disease.

4.2 .Feature extraction :

features are extracted from the image which is uploaded by the user. features like color, textures , size.

4.3 Classification: we are using svm algorithm for our system which is stand for support vector machine .which can help us for image classification .if we have two disease with some same properties then svm will helps us in this case to identify the disease accurately.
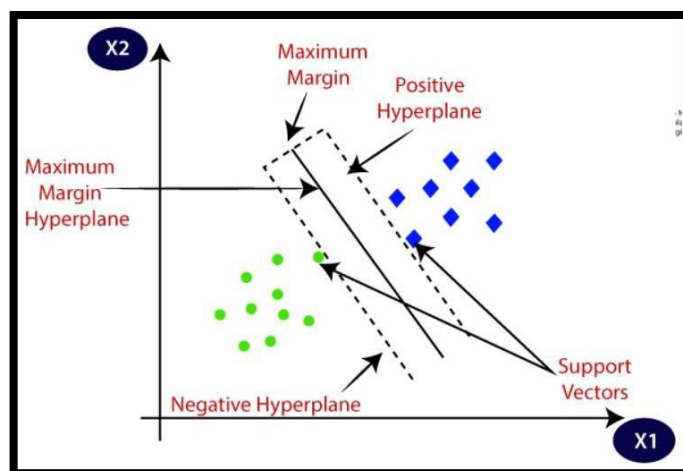

fig:-5: SVM Algorithm

4.4. final Result : The output of our system are shown in Figures .first of fall user has to open our site. user will see welcome page.
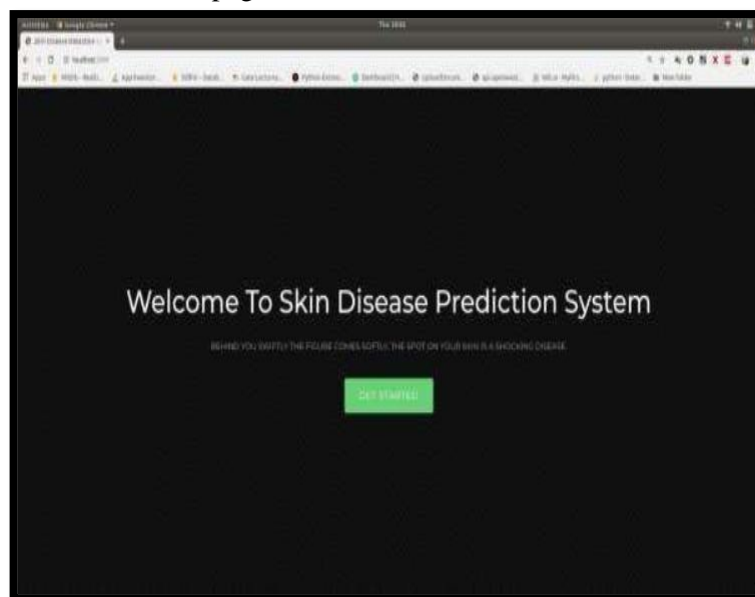

fig-:6welcome page.

- after that user will see the image uploading page. and user has to upload the affected image of the skin and have to wait for some time .we can see it in fig:-7
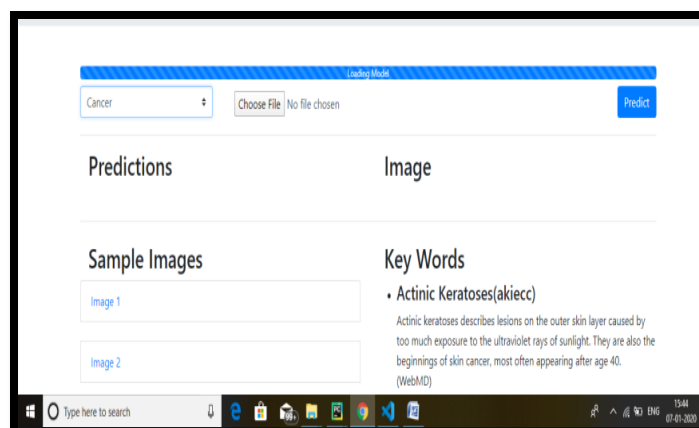
fig-7: input image for proposed model .

- user has to wait for some time while image is processing.after image processing image will displayed on the screen. we can see it in fig:-8
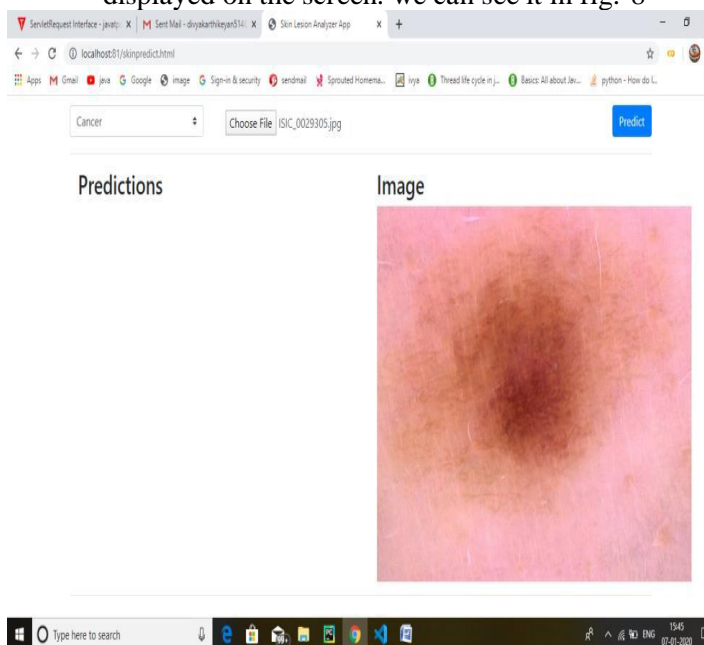

fig-8: After image processing the image is displayed.

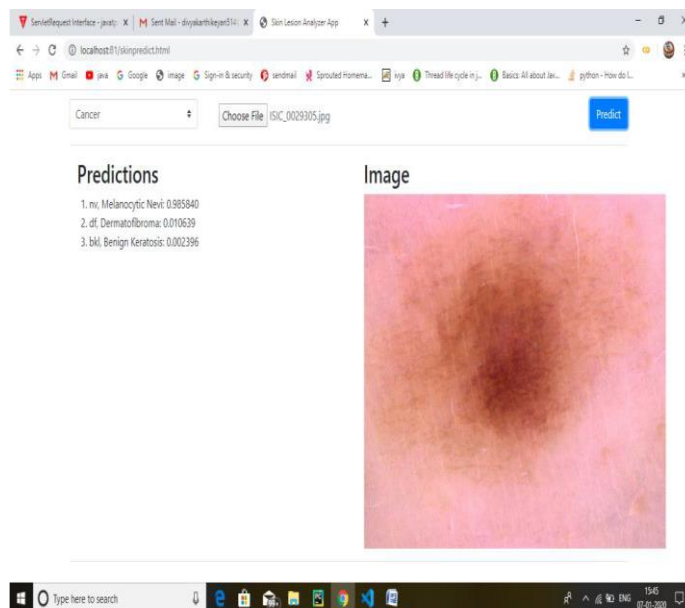- After that the system will give some predictions after working and analyzing the imge. we can see it in fig:-9

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fig-9: skin disease is predicted.

5. Conclusion : we made a system which can detect the disease of skin easily . and we make it user friendly. there are so many other things which can detect problems of skin easily but they are highly expensive. the purpose of our system to provide free of cost service to the user and system will help users from any country.

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