Skin Disease Detection Using Image Processing Technique:

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Abstract: Skin is the most important part of human body which protects our internal part of our body to any injury. However this important part of human body frequently suffered from many known and unknown illness. The procedure for diagnosing and treating a skin disease involves a medical professional but due to the lack of medical facilities, many people around the world experience the side effects of many real skin infections. Detecting of skin diseases at an early period has most significant role to handle the infection. So that's why we proposed a system which is based on computer technology to detect the symptom in early stages. We developed a system which identifies the disease based on input symptoms. In this article we utilize the convolutional neural organization strategy to analyze skin diseases. The raw images taken from the digital camera have been given to the input of Convolutional Neural Network and then system will be trained and tested by these images. Our proposed system identifies three different kinds of skin infections which are melanoma, Eczema and Psoriasis.

Keywords: Skin diseases, Image Processing, Convolutional Neural Network, classification.

1 Introduction

Human skin is a big deal – literally. It's the major organ in the human body and one of the most complicated. It plays an important role in the maintenance of human life and health, but on the other hand it also has many potential problems, with more than three thousand possible skin disorders. With the passage of time skin disease are increasing at a very fast rate. Skin infection is the most recognizable disease of any person. Different factors are contributing to his growths which are lack of awareness, personal hygiene issue, climate changes, illiteracy and the most important pollution. The clinical report appraises that around 33% of the total populace experiences skin infections. More than 2500 people around the world die with these skin diseases. Many skin diseases are screening by some expert dermatologist. Due to lack of medical facility millions of people around the world suffering from serious problems and there infection develops into skin cancer. Therefore, early recognition of skin diseases assumes a significant role in medical treatment.

Know computer technology spread very fast, the artificial intelligence system made it possible to diagnose skin infection more quickly and even accurately. Therefore, in this article, we have suggested an image-based method for diagnosing skin infections. For this purpose images of infection skin area taken by some digital camera and after this use images analysis to identify the type of skin infection. Our proposed system is very simple. It doesn't need any costly hardware other than computerized camera and operating system. Our framework will be partitioned into a few sections, for example, picture preprocessing, feature extraction and the last one is classification of diseases. After all this process this system is implemented on human

skin infected area to detect the symptom. Once the system detects any infection, it will automatically generate E-Prescription, otherwise if the system cannot detect any infection in the human skin, it does not produce an e-prescription. This will show that the skin is healthy and won't should be analyzed by a dermatologist.

RELATED WORK:

Numerous specialists and authors suggested the frameworks which recognize the human skin infection in the light of image processing-based techniques to identify different kinds of skin disease. Here we discuss some of the methods which specialist proposed to detect skin disease.

In (Lukman, 2016) the nearest neighbor-calculation module can be improved by converting the source code to a DMBS query. The procedure can accelerate the cost of eye disease.

In (Archana Sing, 2012) utilize the support vector machine (SVM) to classify the skin disorder. Support Vector Machine (SVM) is expansively used for the classification of skin disease. This system is providing the best accuracy to detect the skin disease.

In (Archana Sing, 2012) proposed a system which use image processing technique to detect the skin infection. It consist two parts, the first is identify the infection by using image color and then classify the infection using neural network.

In (R, 2016) discussed classification of different skin diseases such as Melanoma, Basal cell carcinoma (BCC) by using the support vector machine (SVM) technique. With the help of this system which is based on support vector machine they classify the different skin diseases.

In (Yasir, 2014) this article, proposed a system which use image processing technique to detect the skin disease. In this proposed model, they identify nine different kinds of skin diseases with the accuracy of 90%.

In (Hammed, 2000) this paper, proposed a method for classification Error Correcting Output Codes (ECOC) linear SVM is applied to extract features but in this method there accuracy is approximately 76%.

(Rimi, 2020) This paper provides method of detecting skin infection by using convolutional neural network (CNN). They use 500 raw images of infected area to train their system and they got 73% accuracy to detect the skin disease.

(Tao, 2018) In this paper Author use deep learning algorithm to help diagnose the four different skin diseases. This system is based on domain expert knowledge to improve the accuracy to detect the skin infection.

(Moolchand Sharma, 2021) They develop a system using residual neural networks (ResNet) and this system diagnoses many diseases such as Lichen planus, Benign Tumors, Fungal Infections and Viral Infections. They collect data sets from DERMNET and train them using 50 layered ResNets. They achieve 95% accuracy by using 50 layered ResNets to train their models.

(Wei, 2018) They introduced grey-level co-occurrence matrix (GLCM) method to segment images of skin. By utilizing this strategy they identify three different kinds of disease such as herpes, dermatitis, and psoriasis. Finally Support Vector Machine (SVM) will be utilized for the classification purpose.

Description of the Skin Disease:

We compiled our dataset of symptoms and patients detail related to skin disease from different website. We assemble three different types of skin disease which is most common. These diseases are melanoma, Eczema and Psoriasis.

Eczema   Melanoma   psoriasis

Methodology:

In this portion we briefly discuss the strategy of our suggested system which is consist on identification, feature extraction and the last one is classification of skin diseases by using SVM. Flow chart of our proposed system is shown in Fig 1:
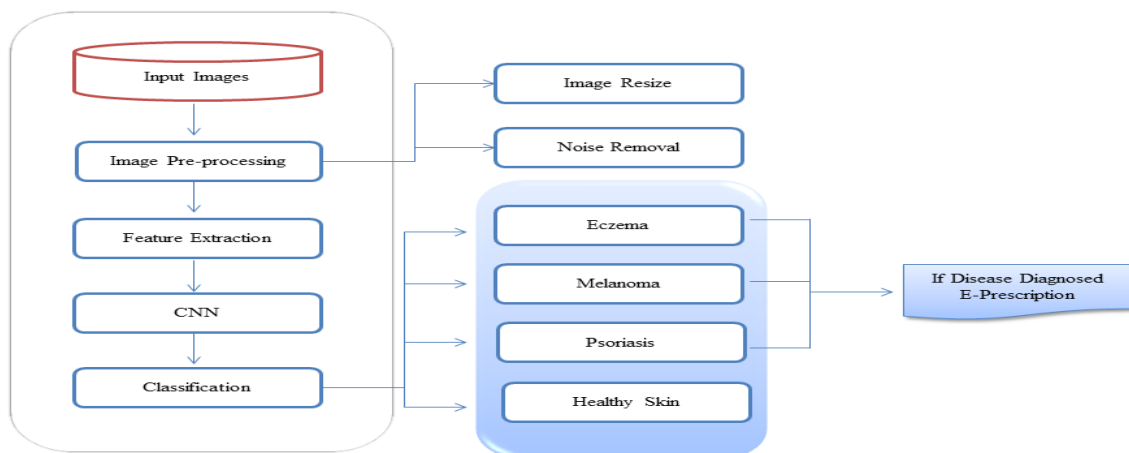

Fig 1: Proposed Model for HSD classification

With the help of this method we expressively detect the skin disease like melanoma, Eczema and Psoriasis. This method is divided into different phases first we detect infected area from pictures then this infected area of skin is preprocessed. Further we apply features extraction of these images and the last one is classification.

Preprocessing:

For proper exposure of skin infection with good accuracy needs some key problems. Such as creating a database and unifying image dimensions. In this section we discuss these issues like image resizing, noise removal etc. after apply these strategy we accomplishing elite execution of skin infection identification framework.

Image Resizing:

Input image in our dataset is either one increase or decrease in size. This various sizes of pictures consume too much time to be processed; therefore we will resize all these pictures to decrease processing time. The equivalent sizes of pictures decrease the computational thickness. The new size of all images which we use to train our model is 227×227 pixels.

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