

Skin Disease Identification using Image Processing

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Abstract: Skin diseases are very dangerous and infectious. Skin disease is most common than other diseases that can be caused by fungal infections, bacteria, allergies or viruses, etc. Skin diseases are conditions that affect your skin. skin diseases are the diseases that can be cured Only by dermatologist and some this skin diseases cannot be a cured by proper medication. Also skin diseases can cause rashes inflammation itching or any other skin changes. the purpose of this research to detect skin disease using image processing. In this process we take the image of the infected part of image and after image analysis using image processing techniques we get the output of which type of disease it is in this we use CNN for real time skin disease detection.

Keywords: CNN, Image Processing, Deep learning, Machine learning

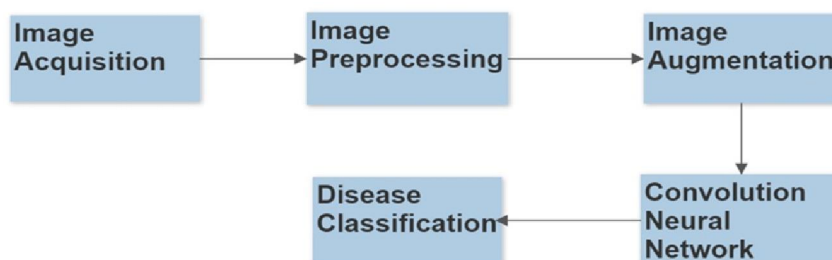
I. INTRODUCTION

Skin disease, any of the disease or disorders that affect the human skin .Most diseases affecting the skin originates on layers of skin. A skin disease may change the texture or colour of skin. Skin disease can cause by fungal infection, bacteria, Viruses etc. Therefore skin disease must be diagnosed at early stage to reduce their development and spread. The skin disease treatment is of very long period of time and in most of the cases people are not aware of this which later increases and its curation is difficult and it can cause death also in some cases.

In this system we proposed a system which is used to detect and recognise which type of skin disease it is. In this system the skin detection works in 3 layers or 3 steps these 3 steps are as follows:-

1. Image acquisition-In this we give the input to the CNN in the form of image which is pre-processed if needed.
2. Image augmentation - The next step is data Augmentation, this result in training of data, creating data model etc.
3. Classification/ output:- The very last step in this is image classification and extraction and finally classify the affected area that which type of skin disease it is our proposed algorithm is fast , simple and does not require any expensive equipment other than a camera and a computer.

In this paper we used Convolutional Neural Network to predict the skin disease.



1.1 Background and Motivation for the Study

The background and motivation for skin disease identification using image processing can be traced by increasing the skin disease and less awareness among people which causes more spread of the disease and cannot be cured easily because its treatment is for long period of time and due to late detection of skin disease it can even cause death and one such evolving disease is skin cancer which if not detected early stage can cause death. Many image processing, deep learning, machine learning techniques, Convolutional neural network have emerged so that we can detect skin disease at early stage and reduce its development and spread. The motivation for the development of skin disease detection system is to reduce the spread of skin disease, reduce death rates by providing these advanced technologies.

In conclusion the background and motivation is rooted in the demand of early detection of skin disease and provide early treatment of these diseases.

1.2 Purpose of the Research

The purpose of this research is to diagnose the skin disease. This method takes the digital method of the affected area and then uses image analysis to identify the type of disease. Our proposed approach is simple, fast and does not require any expensive equipment.

II. LITERATURE REVIEW

Some of the technologies that have emerged in the literature surveys of Skin disease detection are:-

1. **Image Processing:-**Skin disease detection relies on image processing techniques for early detection of skin disease and control their spread. Image Processing involves a detection system which is proposed to enable the detection and recognition of skin disease. In this the user has to provide image of infected area then the input area undergoes preprocessing and goes filtering to remove the noise and segmentation to extract lesion and then finally extract the features of image and classify to detect the affected area.
2. **Machine Learning:-**Skin disease detection using machine learning learns the data and divide the data provided into levels of prediction and in a very short period of time gives the accurate results, thereby promoting and supporting development of dermatology. Existing technology used for skin disease detection are ANN (Artificial Neural Network), BPN (Back Propagation Network), SVM (Support Vector Machine)
3. **Convolutional Neural Network:-**The Skin disease detection using Convolutional Neural Network is done using soft image classifier to diagnose the disease. If no disease is found the system provides negative result. Thus the whole detection is based on convolutional neural network.
4. **Deep Learning:-**Skin Disease Detection rely on deep learning for early detection of skin disease like skin cancer. Deep learning techniques are considered as most sophisticated machine learning subfield concerned with artificial neural network algorithms. These algorithms are inspired by structure of brain. Deep Learning techniques are implemented in many other field also.
5. **Computer Vision:-**In this the skin disease identification is done by image processing and machine learning techniques. the user provides the image of infected area as an input as a next step image preprocessing techniques are performed and image feature values are extracted and then classify which type of disease it is. It is very beneficial to that areas which don't have the facility of dermatologists.

III. METHODOLOGY

The methodology of Skin disease detection works on three phases:-

- (1) Processing of original image
- (2) Feature Extraction
- (3) Classification

1. **Image Preprocessing:** The first method to detect skin disease is Image preprocessing. Image Preprocessing is a nonlinear process to enhance the overall image which involves the input of image from user, then filtering the image, removing the noise, image resizing and doing all the preprocessing steps which are needed after this the image enters the next phase.

2. **Feature Extraction:** This is the second phase of skin disease detection method which is used to analyze the image its features , textures and checks with the dataset the different textures and features shown and also train the model in this phase
3. **Classification:** This the last method for skin disease detection here after features extraction image is classified and tells which type of disease it is.

IV. CONCLUSION

Skin is the largest parts of human body Skin diseases are the mostly common cause of human illness. Skin diseases are increasing in toady time day by day and it causes significant burden in India. The burden is due to both infectious disease and infectious disease and to reduce the development and spread of skin disease we have created a skin disease detection system using image processing and CNN (Convolutional Neural Network).This disease detection is python porotype model so its results are not that accurate they are lacking but mostly results are 80-90% accurate. This system was proposed because clinical procedures were time consuming and sometimes that did not diagnose the exact disease so these techniques are very useful in detection of skin disease. this paper deals with several image processing techniques CNN in effectively and accurately detecting of skin disease. This paper helps in identifying and classifying 5 diseases In this we conclude a brief description of the system and implementation methodology for detecting skin disease is presented.

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