

LITERATURE SURVEY

PAPER TITLE: Multi-type skin diseases classification using OP-DNN based feature extraction approach

YEAR: 2022

AUTHOR Arushi Jain, Annavarapu Chandra Sekhara Rao, Praphula Kumar Jain & Ajith Abraham

ABSTRACT:

In the current world, the disorders occurring in dermatological images are among the foremost widespread diseases. Despite being common, its identification is tremendously hard because of the complexities like skin tone and color variation due to the presence of hair regions. Therefore the type of skin disease prediction is not accurately achieved in many pieces of research. To deal with mentioned concerns, a novel optimal probability-based deep neural network is proposed to assist medical professionals in appropriately diagnosing the type of skin disease. Initially, the input dataset is fed into the pre-processing stage, which helps to remove unwanted contents in the image. Afterward, features extracted for all the pre-processed images are subjected to the proposed Optimal Probability-Based Deep Neural Network (OP-DNN) for the training process. This classification algorithm classifies incoming clinical images as different skin diseases with the help of probability values. While learning OP-DNN, it is essential to determine the optimal weight values for reducing the training error. For optimizing weight in OP-DNN structure, an optimization approach is implemented in this research. The proposed multi-type skin disease prediction model is implemented in MatLab software and achieved 95% of accuracy, 0.97 of specificity, and 0.91 of sensitivity. This exposes the superiority of the proposed multi-type skin disease prediction model using an effective OP-DNN based feature extraction approach to attain a high accuracy rate and also it predict several kinds of skin disease than the previous models.

PAPER TITLE: Effective Skin Disease Detection by Analyzing Color and Texture Using Image Processing

YEAR: 2022

AUTHOR: K. Shingte, Sharmishta Desai

ABSTRACT:

Diseases related to skin are very contagious and are a worrying problem in the society. Skin diseases should be detected at an initial stage, so that they don't spread and proper treatment is given for the detected disease. Fungal infection, bacteria, allergy, or viruses are the common causes of skin diseases. The advancement of photonics, lasers, and scientific technologies which are based on medical technology makes detection of skin diseases quickly and with great accuracy also. The only disadvantage it has is that it is very expensive and the patient has to travel all the way to the hospital. In this paper, many previous research studies are collected, studied, and reviewed. Within the past ponders, the analysts have analyzed a few frameworks, instruments, and calculations which have been effective in classifying skin infections. To implement skin detection using image processing, we will be extracting features which will help us to classify skin diseases. Due to inappropriate weathers, population, and pollution in some areas, skin diseases are common and spread easily. The work will help detect skin diseases easily and with less time with good accuracy. In this process of detection, initially we take an image of the infected area as an input, and then analyze the image to identify the type of the disease. Our approach does not require any costly or huge instruments but just a camera, computer, or a phone and infected patient's image. This approach is implemented on feature extraction, the features which we extract are color and texture of the image. We've used CNN for image processing and AI for classification. Then multiclass SVM is used; the result is displayed after all the processing. The work is focused on detecting 3 different types of diseases using image processing. The diseases reviewed are Eczema, Psoriasis, and Melanoma.

PAPER TITLE: Skin Disease Classification System Based on Machine Learning Technique

YEAR: 2021

AUTHOR: Saja Salim Mohammed and Jamal Mustafa Al-Tuwaijari

ABSTRACT:

Skin diseases are a major and worrying problem in societies due to their physical and psychological effects on patients. Detecting skin diseases at an early stage has an important role in treatment. The process of diagnosing and treating skin injury is related to the skill and experience of the specialist doctor. The diagnostic process must be accurate and timely. Recently, artificial intelligence science has been used in the field of diagnosing skin diseases through the use of machine learning algorithms and the exploitation of the vast amount of data available in health centers and hospitals. In this paper, quite many previous studies related to methods of classification of skin diseases based on the principle of machine learning were collected. In a group of previous studies, the researchers used some systems, mechanisms, and algorithms. Several systems have been successful in classifying skin diseases and achieving varying diagnostic accuracy. Various systems have relied on methods of image processing and feature extraction that help predict and detect disease type. There are other systems designed to identify specific types of skin disease through clinical features and features obtained from tissue analyzes after a skin biopsy of the affected area. This survey shows that the diagnostic accuracy in image processing methods was relatively uneven, ranged between (50% to 100%). As for the methods of treating tissue features, the accuracy was of an excellent level of 94% or more. The results provide an overview of the actual relevant studies found in the literature and highlight most of which research gaps have emerged.

PAPER TITLE: Automatic skin disease diagnosis using deep learning from clinical image and patient information

YEAR: 2021

AUTHOR: K. A. Muhaba, K. Dese, T. M. Aga, F. T. Zewdu, G. L. Simegn

ABSTRACT:

Skin diseases are the fourth most common cause of human illness which results in enormous non-fatal burden in daily life activities. They are caused by chemical, physical and biological factors. Visual assessment in combination with clinical information is the common diagnostic procedure for diseases. However, these procedures are manual, time-consuming, and require experience and excellent visual perception. In this study, an automated system is proposed for the diagnosis of five common skin diseases by using data from clinical images and patient information using deep learning pre-trained mobilenet-v2 model. Clinical images were acquired using different smartphone cameras and patient's information were collected during patient registration. Different data preprocessing and augmentation techniques were applied to boost the performance of the model prior to training. A multiclass classification accuracy of 97.5%, sensitivity of 97.7% and precision of 97.7% has been achieved using the proposed technique for the common five skin disease. The results demonstrate that, the developed system provides excellent diagnosis performance for the five skin diseases. The system has been designed as a smartphone application and it has the potential to be used as a decision support system in low resource settings, where both the expert dermatologist and the means are limited.

PAPER TITLE: A Method Of Skin Disease Detection Using Image Processing And Machine Learning

YEAR: 2019

AUTHOR: Nawal Soliman, ALKolifi ALEnezi

ABSTRACT:

Skin diseases are more common than other diseases. Skin diseases may be caused by fungal infection, bacteria, allergy, or viruses, etc. The advancement of lasers and Photonics based medical technology has made it possible to diagnose the skin diseases much more quickly and accurately. But the cost of such diagnosis is still limited and very expensive. So, image processing techniques help to build automated screening system for dermatology at an initial stage. The extraction of features plays a key role in helping to classify skin diseases. Computer vision has a role in the detection of skin diseases in a variety of techniques. Due to deserts and hot weather, skin diseases are common in Saudi Arabia. This work contributes in the research of skin disease detection. We proposed an image processing-based method to detect skin diseases. This method takes the digital image of disease effect skin area, then use image analysis to identify the type of disease. Our proposed approach is simple, fast and does not require expensive equipment other than a camera and a computer. The approach works on the inputs of a color image. Then resize the of the image to extract features using pretrained convolutional neural network. After that classified feature using Multiclass SVM. Finally, the results are shown to the user, including the type of disease, spread, and severity. The system successfully detects 3 different types of skin diseases with an accuracy rate of 100%.