Abstract

Nowadays humans’ health is deteriorating by dermatological diseases and also the spreading rate is high in our communities. Most of the people are not aware of skin diseases. And they do not realise the seriousness of these diseases. So when the people are affected by these diseases, they try to treat with some remedies by themselves even without knowing what the actual disease is. But it is not a suitable way to cure the disease because it may worse and may lead to complications in future. So still the dermatological diseases remain as one of the main categories of common health issues.

A number of people prefer to use computerised systems to evaluate the disease conditions in these days. And also it is important to know about the diseases to manage that condition and prevent escalation. Therefore ‘skidec’ is implemented, in order to give a knowledge to the users about dermatological diseases as much as possible. One of the main components which is used in this system is image processing technique. The images of skin diseases will be taken and it will be subjected to various preprocessing for noise eliminating and enhancement of the images. Data mining technique is also used in this system. The users can get awareness and predict the effect of the skin diseases and complications from data mining technique. The user can identify the stage of the dermatological disease by applying the classification algorithm. Furthermore, this system will also scrap web pages which are related to that particular disease from known or system verified websites. The content analysis is based on machine learning process especially using Neural Language Processing (NLP).

Hence, the Skidec will undeniably be useful to the users to gain a summarised view of skin diseases and will help to get concern from a dermatologist.

Introduction

The infection rate of dermatological disease is higher than the other diseases because, skin is the largest organ in human’s body. It is assumed that 20-25% of the global human population is affected by skin infection with constant increasing[2]. Skin diseases are transmitted through direct person to person contact or thought any other pest. To avoid humans getting affected by skin diseases many counties are focusing on making dermatological disease awareness programs [3]. Knowing the condition of the dermatological disease will help to cure it or prevent it from escalating. Especially in developing countries, automated system detection of the impact of dermatology on both patients and dermatologists is essential. People can easily get rid of being affected or even if they get affected, they can easily cure most of the dermatological diseases if the diseases are detected at the earlier stage.

To create on awareness about the dermatological diseases, there is a facility in our application which visually delivers the past records of the disease. therefore the user can get to know about the seriousness of the diseases. Visual representation is easy to understand than statistical records. This Application will notify the user about the disease which are identified in future, by analysing the websites though web mining globally . Therefore, the user can be aware of that particular disease which is being identified recently.

There are some mobile applications to identify the type of the diseases by capturing the image of the affected skin. The level of accuracy of the detection of the dermatological diseases is very low. Therefore, a classification model with high accuracy is developed in this application. Most of the peoples do not aware about these kind of diseases. For that purpose a functionality is added to identify the stage of the dermatological diseases. The users can get a clear view about the diseases and the stage of disease they are by using this application. This will help the patients to cure immediately.

Literature review

There are several researches has been done by various parties regarding dermatological disease analysis. Most of the researches are based on image processing. These researches are focused on the accuracy of the image processing. One research was found in Bangladesh based on two phases- first pre-process the colour skin images to extract significant features and later identifies the diseases [4]. This system has detected 9 types of skin diseases including Acne, Leprosy and Vitiligo. The accuracy rate for disease identification is 90%. An other research was found in United Kingdom is also focusing image processing. The skin images have been analysed simple graphic user interface and mobile neural network. Easy access control of the integrated camera was allowed by Application Programming Interface (API). The image which is input, is presented in one dimensional vector contains Red, Green and Blue (RGB) values.

Some other researches are based on low cost smart phone systems. In a research which was found in United Kingdom, the researchers have proposed a low-cost smart phone based intelligent scheme that allows people for regular skin examinations [5][6][7]. There are several technologies have used in that system, for instance using a mobile inexpensive device to capture high resolution skin images using artificial Neural Networks for local abnormal/normal skin image classification, i.e. distinguishing between normal and disease related skin images [5][8][9][10].

In a research was found in Bangladesh, the system they proposed works on two dependent steps - the first detects skin anomalies and the latter identifies the diseases. The system operates on visual input i.e. high-resolution colour images and patient history. In terms of machine intervention, the system uses colour image processing techniques, k-means clustering and colour gradient techniques to identify the diseased skin. For disease classification, the system resorts to feedforward backpropagation artificial neural networks. The system exhibits a diseased skin detection accuracy of 95.99% and disease identification accuracy of 94.016% while tested for a total of 2055 diseased areas in 704 skin images for 6 diseases.

In some models, the condition of the skin disease is identified by evaluating skin disease images by using grey normalized symmetrical simultaneous occurrence stencils (GLCM) method. These systems work with relational databases to the storage of implying the need for textual skin images. These systems can also work for same type of images directly over feature vectors. But in this model only the texture of the skin will be analysed [11], [12], [13].

In a survey based on web news retrieval and mining clearly explained about the identification of the dermatological diseases using web mining. The system they proposed is mainly using web mining technique. The web mining is mining the news contents by data mining and text mining techniques. News retrieval process start with user input. These news retrieval systems try to reduce the retrieval domain and filtering result. News or articles divided into structured data and those data compare news similarities for ranking the news. News filtering check noise and spam news and filter the redundant low informative news based on word similarities and align news extraction performed by automatically extracting parts of news in structured manner. These extractions divided into layout dependent extraction and independent extraction and visual featured based method (for differentiate noise content). In news content analysis part consist three main field of research. Pattern mining which is performed on a corpus of news articles to find meaningful patterns. Opinion Mining and Sentiment Analysis in the News which are performed on the document level. And also, Topic Detection and Tracking which is performed on the whole web [15].