International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2019 IJSRCSEIT | Volume 4 | Issue 8 | ISSN : 2456-3307
DOI : https://doi.org/10.32628/IJSRCSEIT

Skin Disease Detection Using Machine Learning

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ABSTRACT

A skin disease is a particular kind of illness caused by bacteria or an infection. These diseases have various unwanted effects on the skin and keep on increasing over time. It becomes important to recognize these diseases at their initial stage to control it from spreading. These diseases are recognize by using many technologies such as image processing, data mining, artificial neural network (ANN) etc. Now a days ,in area of research related to skin disease detection image processing has played a major role and widely used Techniques like segmentation filtering, image pre-processing, feature extraction and edge detection etc. are part of image processing and are used to recognize the part affected by disease. In this project the database is created on the basis of various images which defines particular skin disease. Data can be stored locally or on cloud. Data will be processed by using A.I. libraries; the methods of regression are used to avoid data storage problems such as big data etc. on the basis of given labeled data the software will train, after providing testing data machine will detect diseases.

Keywords- Machine Learning, Color Detection, Pixel Detection, Image Conversion ,Data Comparison, Database Management

I. INTRODUCTION

As we know that one of the most important organ of human body is skin. But sometimes this organ get affected by some reactions, fungal infection, food poisoning, genetic problems, lac of water and mineral level in body, etc. To avoid this problem we always try to care more about skin but sometimes our skin get affected and then problems get started then we will go to the Doctor they try to cure this problem If it get cure then we can say that the treatment for this problem was right. But sometimes the problems related to skin not get cure because of wrong treatment but why it happens?

The reasons are may be as follows- the disease may not get properly detected or the proper medicine was not provided to the patient So we can avoid the first problem of not getting properly detected by using the term called as Machine Learning. Machine Learning will help us to avoid lots of problem in our day to day life and also in medical problems too.

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II. LITERATURE SURVEY

1."Online Children Skin Diseases Diagnosis System"[MAY 2015] Rule based and forward chaining inference engine methods are used to implement this model which is used to identify the skin disease. By using this system, user is allowed to identify children skin diseases via online and provide useful medical suggestions or advice timely. In this system, it consists of diagnosis module, login module, info module, report module and management module. There are two main modules called diagnosis and management module. In the diagnose module questions are asked to the user and on the basis of answers given by the user, Children's symptoms and condition are identified. This system may be an alternative for parents to identify skin diseases of children, in response to the questions about the symptoms and the condition children's skin.

2."An automated system for recognizing disease conditions of human skin" [2016]

In this model, the condition of the skin disease is identified by evaluating skin disease images by using grey normalized symmetrical simultaneous occurrence stencils (GLCM) method. The proposed system is used in an efficient and economical for the automatic recognition of skin diseases. This system is useful for the skin to reduce the error with medical diagnosis. Another is the first test for patients in rural areas, where the good doctors are missing. The system works with relational databases to the storage of implying the need for textual skin images. This system can also work for same type of images directly over feature vectors.

3."Mobile-based Medical Assistance for Diagnosing Different Types of Skin Diseases Using Case-based Reasoning with Image Processing "[2018]

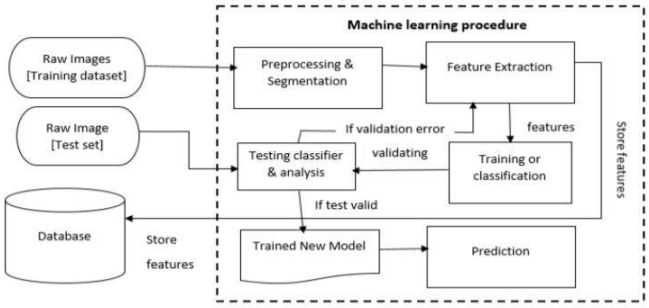
In artificial intelligence (AI), medical field is a recent area for research purpose. This paper implements a mobile based medical assistance which is used for diagnosing skin diseases by the use of CBR and image processing. This model was developed to help users to pre-examine their skin situation whether they have a disease or not. Also to increase the awareness of skin diseases on what it may do to our bodies which will lead to death or infecting other people and have a cure before it gets worse. The proposed system is successfully implemented to detect 6 different skin diseases with an accuracy of 90%. The scale of symptoms, which is used for testing, is 15%, for validation it is 10% and for testing it is 75%. This supervised system identify diseases at the rate of 90% where the unsupervised system detect diseases at the rate of 80%.The detection rate of the sample disease with the other related disease is as follows: Eczema – 88%; Psoriasis – 61%; Acne – 75%; Skin Cancer – 51%; Scabies – 43%; and SeborrheaDermatitis – 34%.

III. PROBLEM STATEMENT

To design a system which can help in skin disease detection in early stages of occurrence. This paper states that using artificial intelligence technology skin disease detection can be done with more accuracy and with loss cost.

Maximum accuracy is obtain by using machine learning technology. Cost reduction and easy processing helps in identification of skin disease at early stages and harmful effects are avoided.

IV. EXISTING SYSTEM ARCHITECTURE



V. EXISTING SYSTEM

In this system, we are considering a train of images that will be obtained from the user and preprocessing and segmentation will be performed on each image. Then feature extraction is done on each image to extract features that can be used to create classification model. With this classification model, system finally can predict the disease for a new image of a skin disease which will be obtained by the user through Android application. And based on this predicted disease, system will ask question from the user and based on answer, system will decide disease type. Finally, our system suggests medical treatment or the advice based on predicted skin disease result. In this system, we are taking into consideration three diseases viz. Eczema, Fungal infection, Urticaria. shows system architecture, which shows the principal processes of the proposed system. In this section, we discuss the proposed methodologies in detail pre-processing is an essential step of detection in order to remove noise such as hair clothing and other artifacts and enhance the quality of original image. The main purpose of this step is to improve the quality of skin image by removing unrelated and surplus parts in the back ground of image for further processing.

VI. SYSTEM REQUIREMENT

Software requirement.

- Python 3.7.
- Jupiter.

Hardware requirement

- Camera.
- RAM more than 4 GB.
- 32/64 bit system.
- Memory more than 512 GB.

VII. RESEARCH METHODOLOGY

To complete the training and testing phase of the algorithm we need to follow some methodology as follows :-

1. Population and Sample:

To train the algorithm we need lots of Image data. That number may be goes in thousands. The all data should be labeled data.

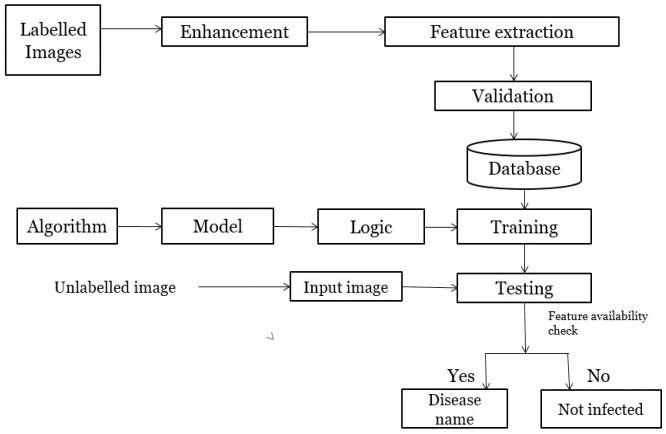
As shown in image.

Fig 1: WHITE SPOT ON SKIN

2. Data and Sources of Data

The required data can be generated by the help of doctors (skin specialist) by getting the images of affected skin of patient. That data will be the labeled data which will provide to the algorithm for training .

VIII. PROPOSED SYSTEM ARCHITECTURE



IX. EXPECTED RESULTS

After performing both the phases of training and testing we can get the result as Disease name.

X. TAXONOMY TABLE

	Disease Detection	Time Efficient	Cost effective	Training capability	Redundancy handling capability	Regression testing	Low error rate
OI children disease detection	✓	✗	✗	✗	✗	✗	✗
Automated sys for disease detection condition of human skin	✓	✗	✗	✗	✗	✗	✗
Mobile based disease detection	✓	✓	✓	✗	✗	✗	✓
Proposed sys	✓	✓	✓	✓	✓	✓	✓

XI. CONCLUSION

The proposed system detects the skin disease by using machine learning technologies and maximum accuracy is obtained.

XII.ACKNOWLEDMENT

We want to acknowledgement Principal. Head of department and guide of our project for all the support and help rendered. We wish to express our profound thanks to all who helped us directly or indirectly in making this paper. We are thankful to our project guide Prof.Chaitanya Bhosale for her valuable guidance. We also wish to thank our HOD. Prof. Pankaj Agarker and Director Dr.M.Z.Shaikh for their kind support.

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Cite this article as : Prabhakar Satpute, Kuldeepsingh Rajput, Prajakta Jagdale, Satish Chavhan, Prof. Chaitanya Bhosale, "Skin Disease Detection Using Machine Learning", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN : 2456-3307, Volume 4 Issue 8, pp. 98-101, September-October 2019.
Journal URL : http://ijsrcseit.com/CSEIT194823