

Skin Disease Detection Using Machine Learning

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ABSTRACT

A disease of the skin is additionally a selected quite illness caused by bacteria or an infection. These diseases have various unwanted effects on the skin and keep it up increasing over time. It becomes important to acknowledge these diseases at their initial stage to manage it from spreading. These diseases are recognize by using many technologies like image processing, processing, artificial neural network (ANN) etc. Now a days ,in area of research regarding disease of the skin detection image processing has played a giant role and widely used Techniques like segmentation filtering, image pre-processing, feature extraction and edge detection etc. are an area of image processing and are use to acknowledge the part suffering from disease. In this project the database may be a created on the concept of various images which defines particular disease of the skin. Data are becoming to be stored locally or on cloud. Data are becoming to be processed by employing a.I. libraries; the methods of regression are use to avoid data storage problems almost like big data etc. on the thought 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 all know that one among the foremost important organ of physical bodies is skin. But sometimes this organ get affect by some reactions, mycosis, illness, genetic problems, lac of water and mineral level in body, etc. To avoid this problem we always decided to stress more about skin but sometimes our skin get affected then problems start then we'll attend the Doctor they struggle to cure this problem If it get cure then we'll say that the treatment for this problem was right. But sometimes the issues regarding skin not get cure thanks to wrong treatment but why it happens?

The reasons are could even be as follows- the disease won't get properly detected or the proper medicine wasn't provided to the patient So we'll avoid the primary problem of not getting properly detected by using the term called as Machine Learning. Machine Learning will help us to avoid many 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 accustomed implement this model which use to identify to spot the disease of the skin. By using this system, user is allowed to identification children skin diseases via online and provides useful medical suggestions or advice timely. during this method, it consists of diagnosis module, login module, info module, report module and management module. There are two main modules called diagnosis and management module. within a diagnose module questions are asked to the user and on the concept of answers given by the user, Children's symptoms and condition are identified. this system could even be another for people to identification skin diseases of kids, in response to the questions on the symptoms and also the condition children's skin.

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

In this model, the condition of the disease of the skin is identified by evaluating disease of the skin images by using grey normalized symmetrical simultaneous occurrence stencils (GLCM) method. The proposed system is use in an efficient and economical for the automated recognition of skin diseases. this method is beneficial for the skin to reduce the error with diagnosis. Another is that 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 necessity for textual skin images. this method also can work for same quite 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 AI (AI), medical field could even be a recent area for research purpose. This paper implements a mobile based medical assistance which is employees for diagnosing skin diseases by the used of CBR and image processing. This model was developed to help users to pre-examine their skin situation whether there or not have a disease or not. Also to increase sing the attention of skin diseases on what it goinig to undertake to to to our bodies which may cause death or infecting 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 dimensions of symptoms, which is use for testing, is 15% , for validation it's 10% and for testing it's 75% . This supervised system identify diseases at the speed of 90% where the unsupervised system detect diseases at the speed of 80% .The detection rate of the sample disease with the others related disease is as follows: Eczema – 88% ; Psoriasis – 61% ; Acne – 75% ; carcinoma – 51% ; Scabies – 43% ; and Seborrhea Dermatitis – 34% .

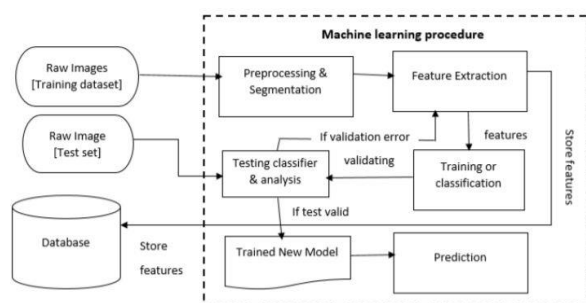
III. PROBLEM STATEMENT

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.

EXISTING SYSTEM ARCHITECTURE



IV. EXISTING SYSTEM

In this system, we are considering a train of images which might be obtained from the user and preprocessing and segmentation have gotten to be performed on each image. Then feature extraction is completed on each image to extract features which might be accustomed create classification model. With this classification model, system finally can predict the disease for a replacement image of a disease of the skin which could be obtained by the user through Android application. And support this predicted disease, system will ask question from the user and support answer, system will decide disease type. Finally, our system suggests medical treatment or the recommendation supported predicted skin condition result. during this method, we are taking into consideration three diseases viz. Eczema, mycosis, Urticaria. shows system architecture, which shows the principal processes of the proposed system. during this section, we discuss the proposed methodologies intimately pre-processing could also be a necessary step of detection so on get obviate noise like hair clothing and other artifacts and enhance the quality of original image. the foremost purpose of this step is to boost the quality of skin image by removing unrelated and surplus parts within the rear ground of image for further processing.

V. SYSTEM REQUIREMENT

Software requirement.

Python 3.7.

Jupyter.

Hardware requirement

Camera.

RAM quite 4 GB.

32/64 bit system.

Memory over 512 GB.

VI. RESEARCH METHODOLOGY

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

Population and Sample:

To train the algorithm we'd like many Image data. That number is additionally goes in thousands. The all data should be labeled data.

As shown in image.

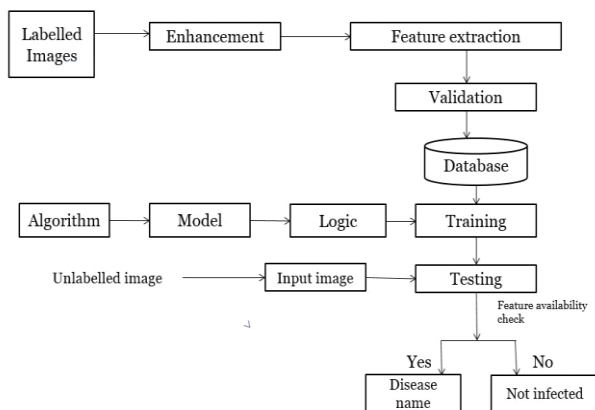


Fig: WHITE SPOT ON SKIN

2. Data and Sources of Data:

The required data are often generated by the helps of doctors (skin specialist) by getting the pictures of affected skin of patient. That data are the labeled data which can provide to the algorithm for training.

VII. PROPOSED SYSTEM ARCHITECTURE



VIII. EXPECTED RESULTS

After performing both the phases of coaching and testing we are getting to urge the result as Disease name.

TAXONOMY TABLE

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

RESULT

```

ganesh@ganesh-Vostro-3546: ~/junk/project/tensorflow-for-poets-2
$ python3 train.py
INFO:tensorflow:2019-05-29 10:43:22.893152: Step 210: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:22.893339: Step 210: Cross entropy = 0.000030
INFO:tensorflow:2019-05-29 10:43:22.893777: Step 210: Validation accuracy = 26.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:22.450652: Step 220: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:22.450858: Step 220: Cross entropy = 0.000030
INFO:tensorflow:2019-05-29 10:43:22.484833: Step 220: Validation accuracy = 26.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:22.884893: Step 230: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:22.885062: Step 230: Cross entropy = 0.000030
INFO:tensorflow:2019-05-29 10:43:22.839997: Step 230: Validation accuracy = 26.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:23.518344: Step 240: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:23.519772: Step 240: Cross entropy = 0.000037
INFO:tensorflow:2019-05-29 10:43:23.195276: Step 240: Validation accuracy = 22.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:23.527806: Step 250: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:23.527977: Step 250: Cross entropy = 0.000030
INFO:tensorflow:2019-05-29 10:43:23.583972: Step 250: Validation accuracy = 21.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:23.892867: Step 260: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:23.892835: Step 260: Cross entropy = 0.000047
INFO:tensorflow:2019-05-29 10:43:23.929835: Step 260: Validation accuracy = 29.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:24.281511: Step 270: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:24.281322: Step 270: Cross entropy = 0.000021
INFO:tensorflow:2019-05-29 10:43:24.297740: Step 270: Validation accuracy = 18.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:24.635598: Step 280: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:24.635771: Step 280: Cross entropy = 0.000020
INFO:tensorflow:2019-05-29 10:43:24.678839: Step 280: Validation accuracy = 20.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:24.998824: Step 290: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:24.998261: Step 290: Cross entropy = 0.000020
INFO:tensorflow:2019-05-29 10:43:25.036218: Step 290: Validation accuracy = 32.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:25.363122: Step 300: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:25.363332: Step 300: Cross entropy = 0.000018
INFO:tensorflow:2019-05-29 10:43:25.400244: Step 300: Validation accuracy = 27.0% (N=100)
INFO:tensorflow:2019-05-29 10:43:25.722895: Step 310: Train accuracy = 100.0%
INFO:tensorflow:2019-05-29 10:43:25.722888: Step 310: Cross entropy = 0.000020
INFO:tensorflow:2019-05-29 10:43:25.733121: Step 310: Validation accuracy = 24.0% (N=100)
  
```

```

ganesh@ganesh-Vostro-3546: ~/junk/project/tensorflow-for-poets-2
$ python3 test.py
2019-05-29 10:50:46.254787: I tensorflow/core/platform/cpu_feature_guard.cc:140] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA
(Validation time (1-Image): 0.119s)
normal (score=1.00000)
net_patch (score=0.00000)
ganesh@ganesh-Vostro-3546: ~/junk/project/tensorflow-for-poets-2
  
```

IX. CONCLUSION

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

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XI. REFERENCES

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