SKIN DISEASES IDENTIFICATION USING IMAGE ANALYSIS

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE INTERNSHIP

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DECLARATION

I hereby declare that the Project entitled "Skin Diseases Identification using Image Analysis" submitted by me, for the award of Internship in Programme to SmartInternz is a record of bonafide work carried out by me under the supervision of Surya Tej Mahankali . I further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Place :

Date :

Signature of the Candidate :

Executive Summary

The Main motive of this project is to develop a model that can be used to predict the difference in different type of skin disease. In my model I have included 5 types of diseases that are

1)actinic keratosis

2) melanoma

3) nevus

4) pigmented benign keratosis

5)vascular lesion.

For developing this model, I have used Machine Learning with help of deep learning. For getting better accuracy and taking note of my system configure I have constrained my epochs level to average.

I have developed a website to host it and make it as real-life solution.

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1. INTRODUCTION

1.1 Objective:

The main Objective to build this project was to solve the real-world problem of diagnosis of different type of skin disease. The main motto was to give a basic idea to the patient that from which disease they are suffering only by uploading the photo of their affected area. although the machine model cannot predict to 100% surety but up to some extinct it can be true.

1.2. Motivation:

The motivation behind this project was that there are numerous type of skin disease in this world and a normal human cannot differentiate among it using human eye, there need to be some special specification to distinguish it so that machine can help human and help as first aid so that can check and take step according to it.

1.3. Background:

To build this model the developer need to have a better understanding of python language, type of neural network and layer and machine Learning. For making the dataset I have collected images from various sites and make a total of 2500 images of various disease.

2. PROJECT DESCRIPTION AND GOALS:

To build the project various Python Library is Installed and each library has it specific purpose. In order to make it more accurate I have put one input layer and one output layer and 5 hidden layers with a batch size of 12 and epochs of 60.

The desired output of this project is to build the real time application so that people can use it as a first aid and can get a better idea of what disease they are suffering from and can take medical procedure on its basis.

3.TECHNICAL SPECIFICATION:

The whole project is built on Jupyter note using python language and machine learning + deep learning algorithm.

The website is hosted using local server plus for stronger usage IBM cloud-based service is used.

The dataset is collected by me from various sites and mainly HAM1001 dataset is used. 5 type of skin disease is used by me for training the model.

4. DESIGN DETAILS AND APPROACH:

An interactive web portal is designed using programming languages like HTML, CSS and java-script

Front end of webpage is designed using HTML, decoration is done with the help of CSS. Back end is designed using database languages like MYSQL... JavaScript enables taking input from user and display desired output.

The important features of portal are registration to portal, detection of disease with accuracy, search button which helps to know more about your disease. Portal also provides the algorithm by which detection is done. Python is also used to connect html code (web portal) with ML model.

Ultimately, this portal act as a kit which helps to detect a person disease before consulting a doctor for treatment.

5. SCHEDULE, TASKS AND MILESTONES:

Skin disease prediction using CNN is being done for a period of 30 days.

TASKS:

- Collection of data and fit it in test and train folders.
- Here i collected a dataset of nearly 2500 images. 80% of them are filtered to train folder and remaining to test folder.
- Data pre-processing
- Here we removed duplicate images, irrelevant images and made data worthy.
- Importing libraries
- I imported keras library and sequential to initialize layers and dense to built layers.
- Building and saving of model
- Here we performed n epochs with n batches to obtain good accuracy. The model is saved with py extension.
- Hosting using html and python
- My project is hosted locally. It can also be done in IBM portal to enhance standard of project

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MILESTONES:

- Obtaining desired output with high accuracy
- The user can also upload blur and unclear images so it is sometimes difficult to predict disease with good accuracy.
- Day to day updating of portal info and functionality
- As diseases are increasing day by day it is very tough to include all disease samples and info.

6. UNIQUENESS:

- ❖ This portal is not limited to only single disease prediction, it works for multiple skin diseases
- ❖ It provides faster, correct output with high accuracy.
- ❖ This portal enables the patient to detect the skin disease which he is suffering without consulting doctor just by uploading an image

7.IMPACT ON BUSINESS:

The existing system is we need to consult doctor physically to identify the skin disease we are suffering from. The proposed system interacts with patient through online. It also gives prior knowledge to patient about his disease.

It helps in reducing work load of hospital. It leads to increase in number of patients treated by doctor per day. Sometimes it also helps patient to cure his disease himself without consulting doctor by following precautions available in INTERNET.

8.SCOPE:

This project can be accessed by all.

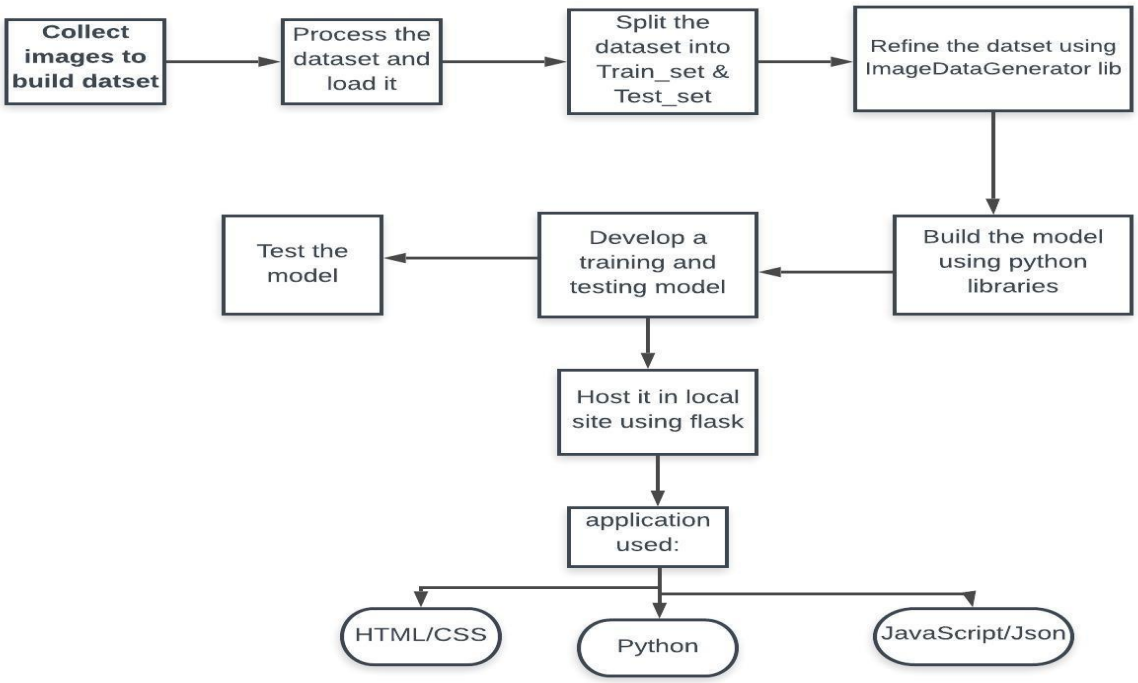
A Scope of Work should include the following components:

1. Glossary
2. Problem Statement
3. Goals of the Agreement
4. Objectives of the Agreement/Deliverables
5. Administration
6. Timeline

9. EXPERIMENTAL INVESTIGATIONS:

During our investigation, we got to know all the required parameters to pr edict the performance of our project:

9.1 Flow-Chart of our Model :

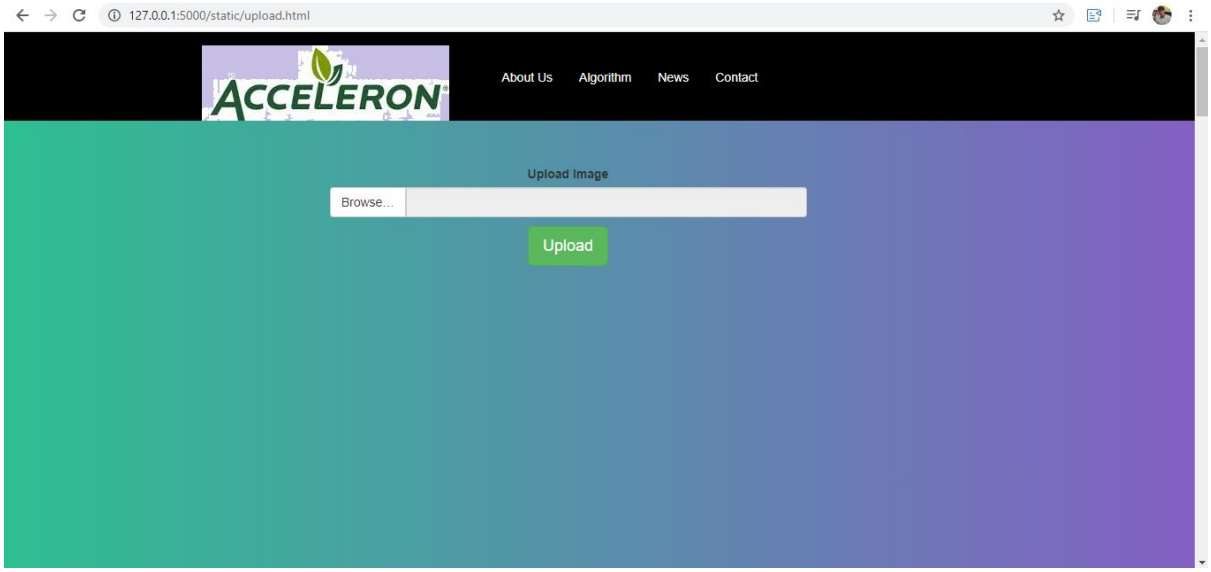


9.2 Model

The following are the pages of our model

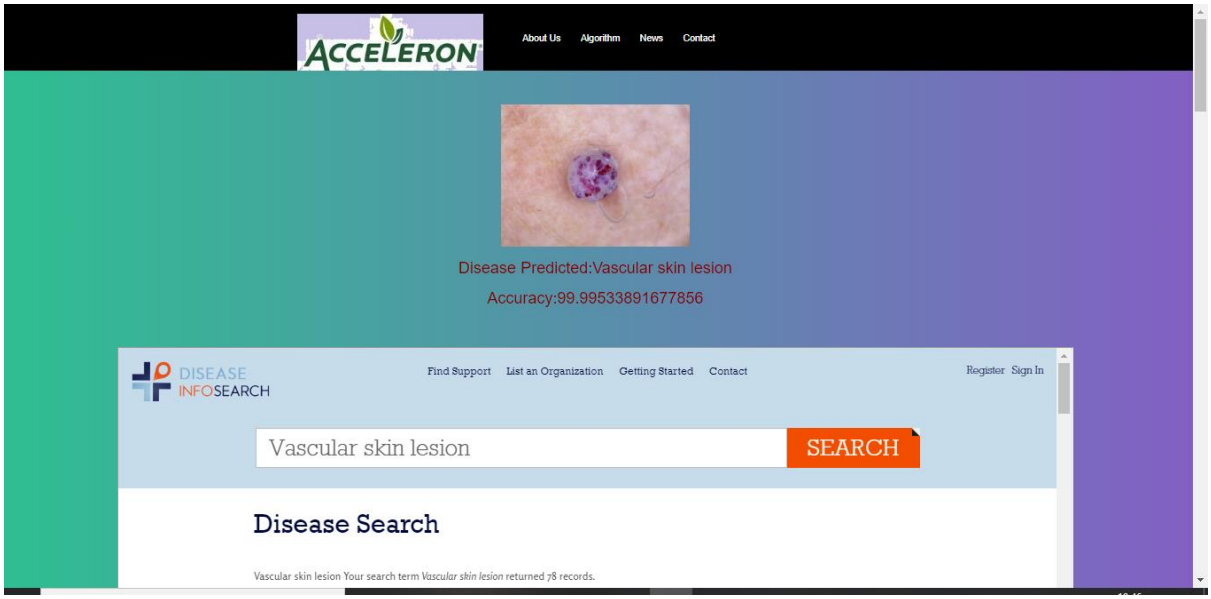
a) **Main page**

b) **Upload Page:**



10. RESULT

The output predicted by our model is as shown below :



**The Output show the accuracy of prediction made by it. Also I have given a search tab which can lead us to give more information regarding our disease.

11. ADVANTAGES & DISADVANTAGES:

Advantages:

- ✓ Perfect prediction of the skin disease patient is suffering from
- ✓ Can be used a First-aid just by uploading the photo of infected area.
- ✓ Extremely easy to use and understand
- ✓ Straight forward result with automatically Net search result for better supervisions.

Disadvantages:

- × Requires internet access for it
- × Require a good camera so that clear photo can be taken

12. CONCLUSION

The important parameter for any application is to give a satisfactory outcome and our model gives exactly that. It is easy to use and can be used for any sort of skin disease.

13 BIBILOGRAPHY APPENDIX

Model Building

- Dataset
- Notebook

Application Building

- HTML 5 and CSS 3 files
- Flask
- Jupyter Notebook.