SKIN DISEASE IDENTIFICATION USING IMAGE ANALYSIS

A project by-

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ABSTRACT

Skin Diseases are very common. These skin diseases can be caused in many ways. Now, medical technology is very advanced, that the diagnoses are easier and quicker. But the cost of these diagnoses is very expensive and limited. Sometimes we neglect them at the early stage and later it becomes more complex to prevent their effect. The main goal is “Can a machine identify the skin disease without visual examination?” Being able to do so, is the identification of skin disease at an initial stage which helps everyone to prevent the disease at a starting stage. We used Convolutional neural networks to create a deep learning model for image processing. In my project, we have to upload an image of skin disease and the deep learning model classifies it into any of the five categories on which the model is trained. Here, we need to upload an image as input. The uploaded image of skin disease is classified and the final output would be the name of the disease and they can also check the symptoms of the disease. In this way, the diagnosis has become easier by just uploading an image.

INTRODUCTION

- Dermatology remains the most uncertain and complicated branch of science because of it complicacy in the procedures involved in diagnosis of diseases related to hair, skin, nails.
- The skin disease diagnosis includes series of pathological laboratory tests for the identification of the correct disease. These Skin abnormalities are very infectious and need to be treated at earlier stages to avoid it from spreading.
- The main purpose is “Can a machine identify the skin disease without a visual examination?” The main goal of this project is the implementation of algorithms for skin disease identification that allows detecting the type of the skin disease using an image analysis technique where the uploaded image is classified as one of the five types of skin diseases on which the model is trained.

MOTIVATION

- 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 very expensive. So, we came up with an idea of implementing image processing techniques along with deep learning networks help to build an efficient automated screening system for most common skin diseases.
- During this pandemic ,we have seen lot of people hesitant towards physical contact which resulted diagnosis of skin diseases burdensome.
- We have collected manually over 900 images of most common diseases(5 categories) from google and built a model .
- Our system successfully detects 5 different types of skin diseases with an accuracy rate of 81%

HARDWARE AND SOFTWARE REQUIREMENTS

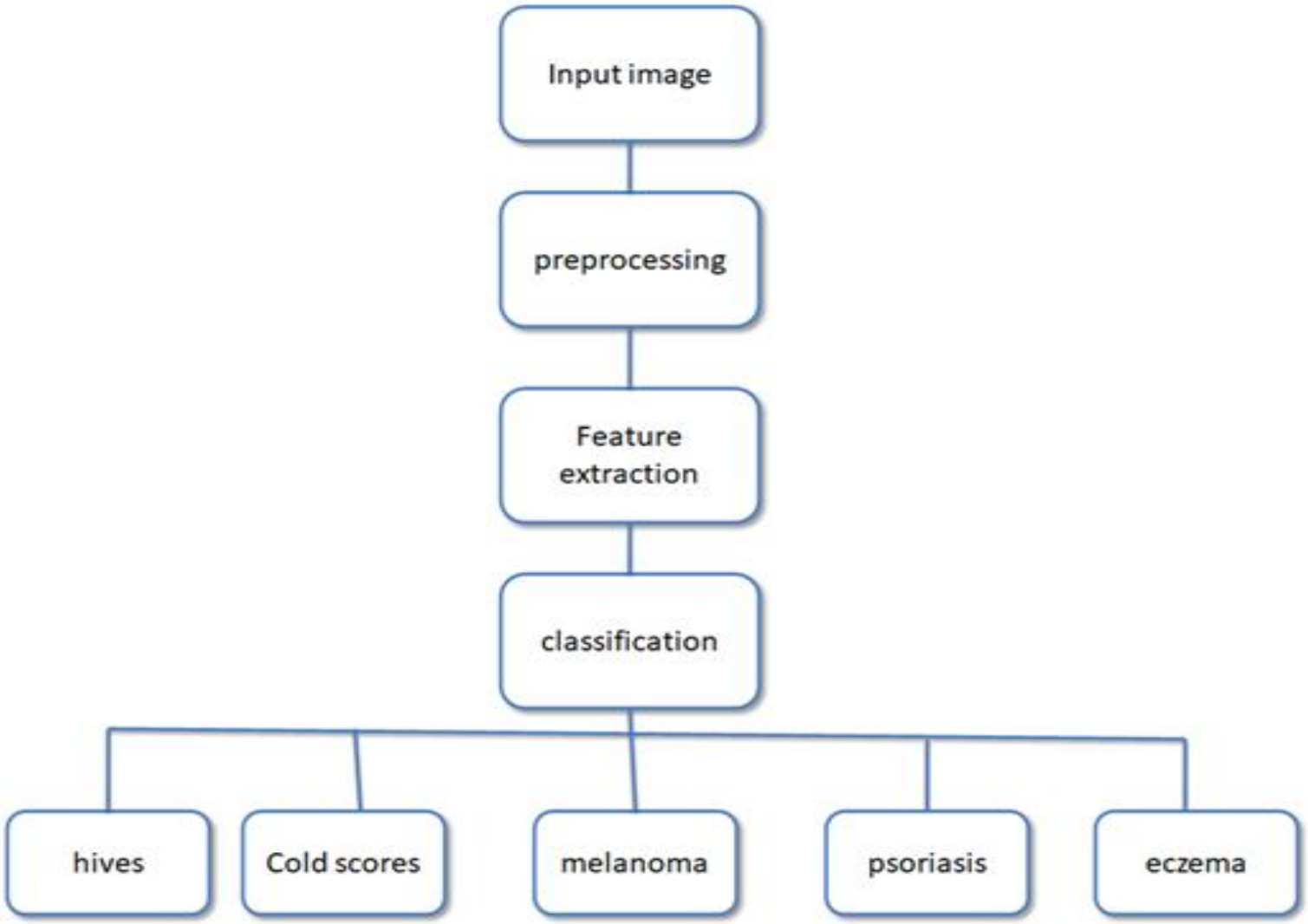
Hardware Requirements:

Processor :: INTEL Quad Core Processor or higher. System
Specifications :: 8 GB RAM DDR4 , 64-bit-Operating System
Hard disk :: 20 GB

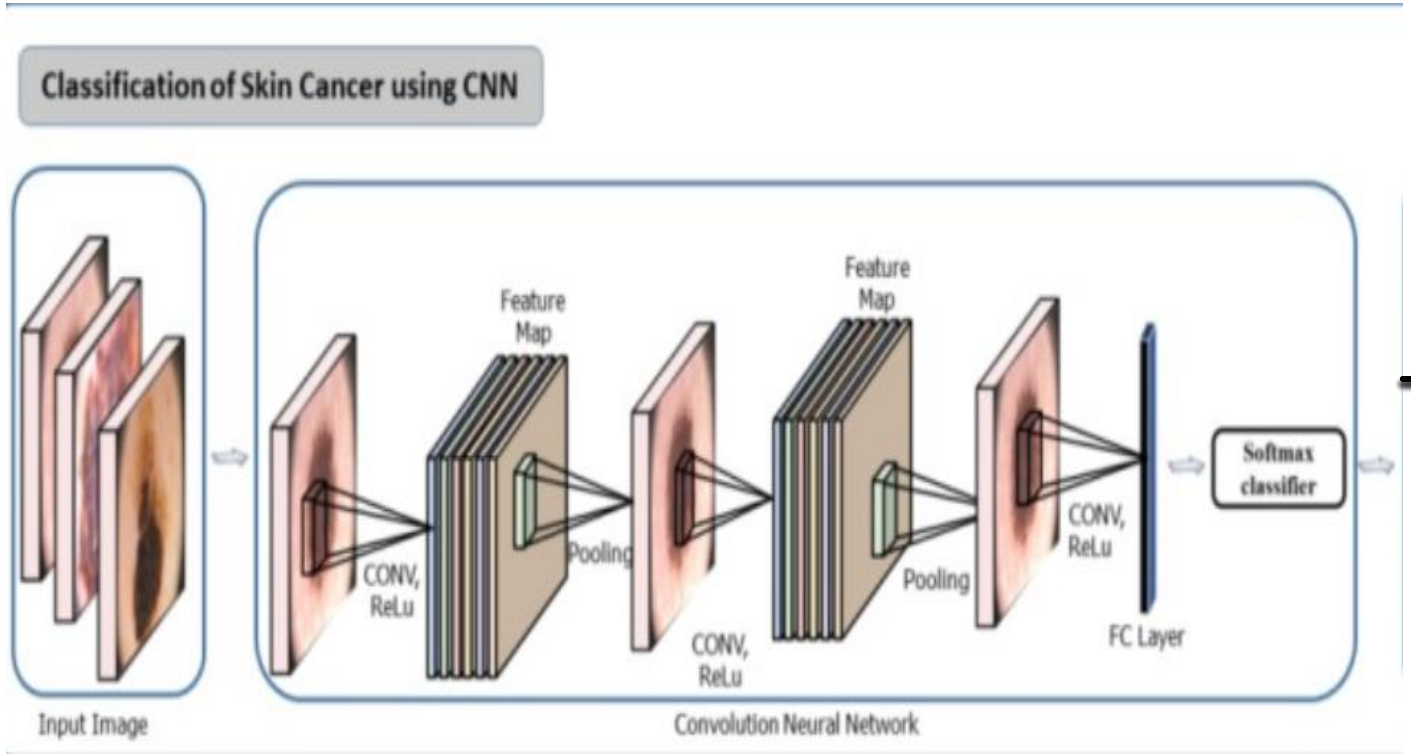
Software Requirements:

IDE for Python :: Spyder, jupyter
Package Manager :: Anaconda
Operating System Suggested :: Windows 10

DESIGN


Input image
preprocessing
Feature extraction
classification
hives
Cold scores
melanoma
psoriasis
eczema

ARCHITECTURE



- Melanoma
- Psoriasis
- Eczema
- Hives
- Cold sores

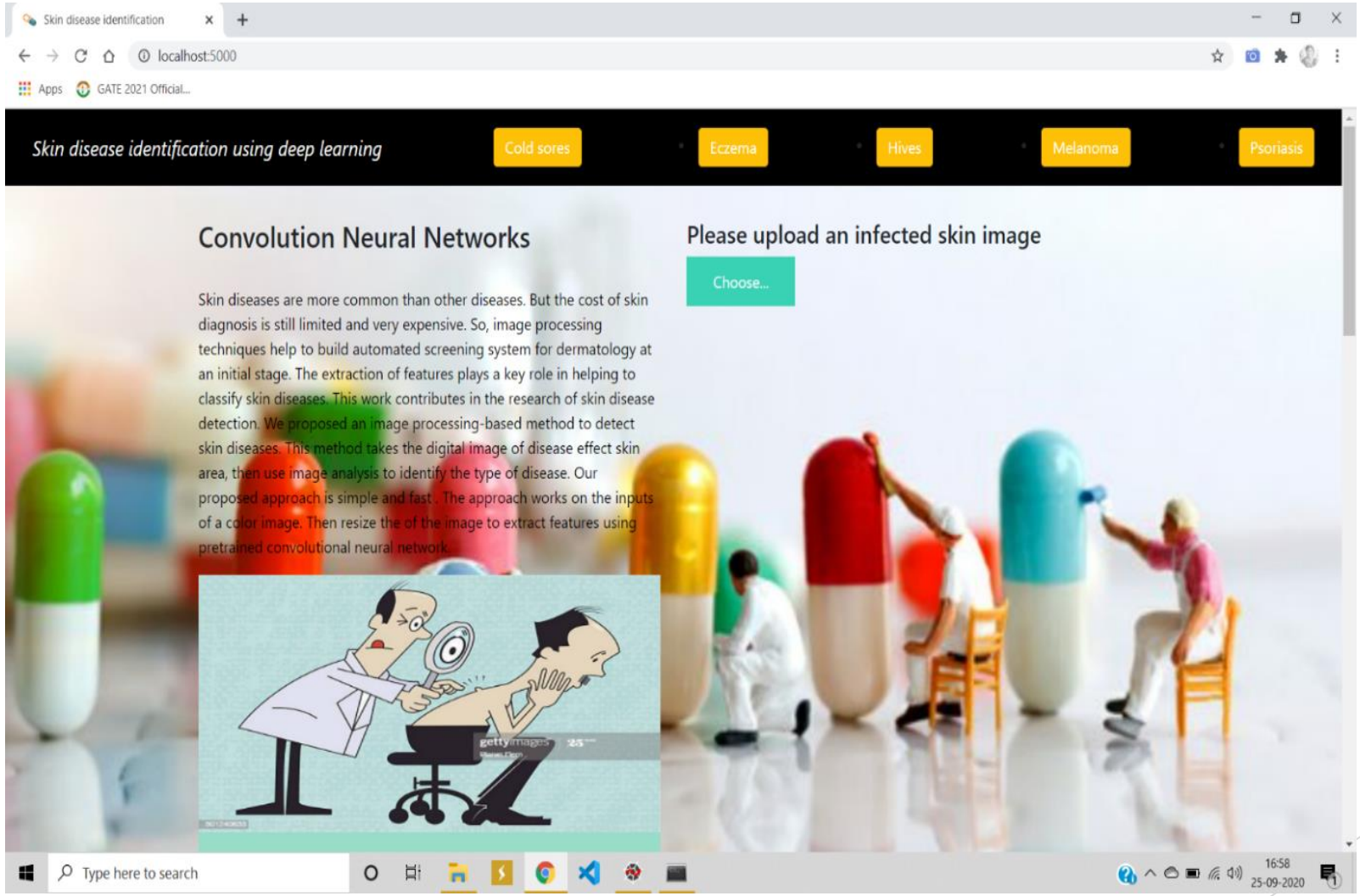
BENEFITS

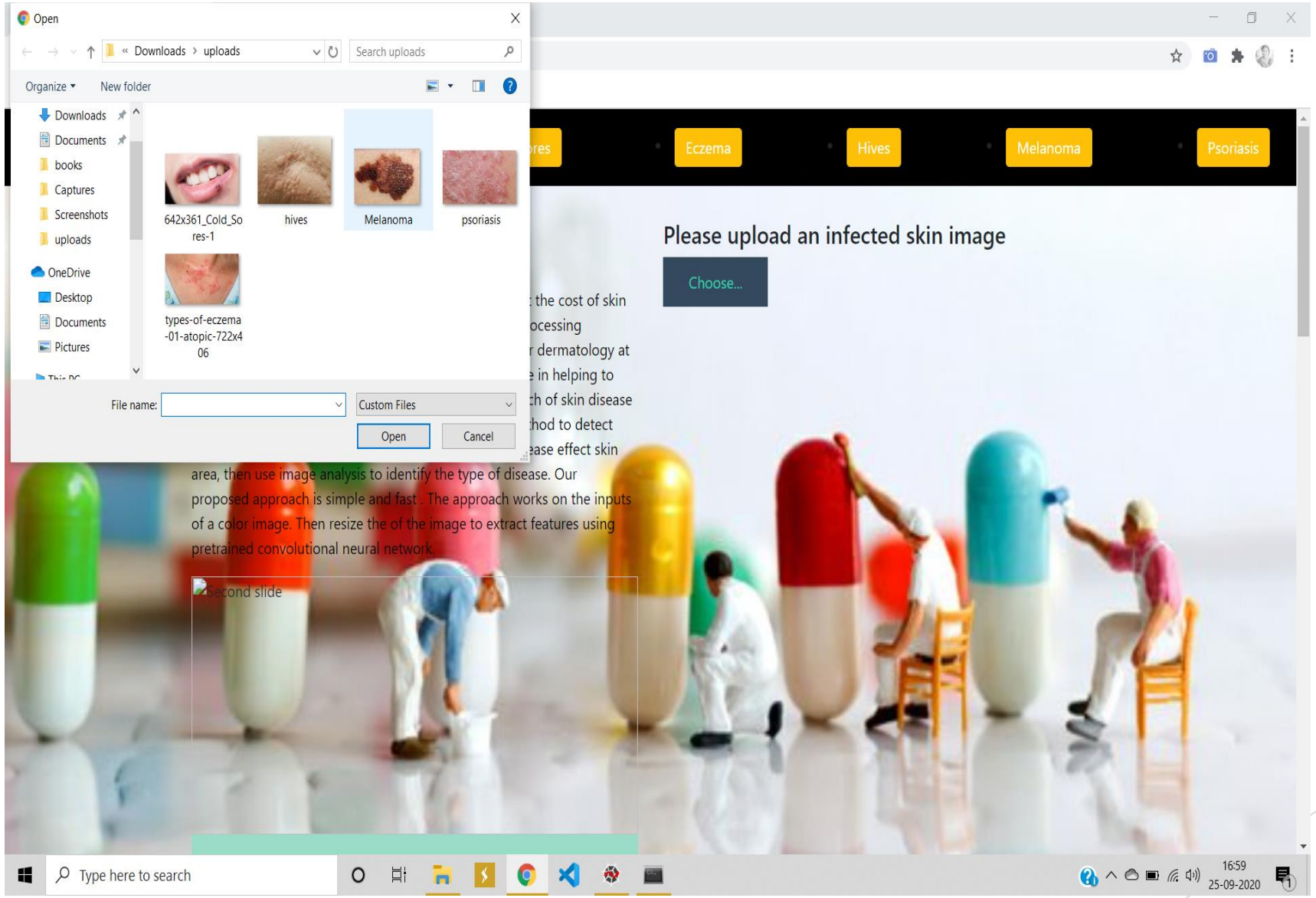
- In rural areas, as the hospitals are not much developed, there is no facility of diagnosing the skin diseases. So it will be easy and economical for people to self diagnose disease at early stages.
- As diagnosing skin diseases at hospitals include heavy scans and doctor consultation which is not affordable and available for all. Using the model we can overcome these odds

END USERS

- People living in remote areas.
- Diagnosis centres.
- People who cannot bear diagnosis scans and tests.

OUTPUT SCREENSHOTS




Open
Downloads › uploads
Search uploads
Organize
New folder
Downloads
Documents
books
Captures
Screenshots
uploads
OneDrive
Desktop
Documents
Pictures
642x361_Cold_Sores-1
hives
Melanoma
psoriasis
types-of-eczema-01-atopic-722x406
File name:
Custom Files
Open
Cancel
Eczema
Hives
Melanoma
Psoriasis
Please upload an infected skin image
Choose...
the cost of skin
ocessing
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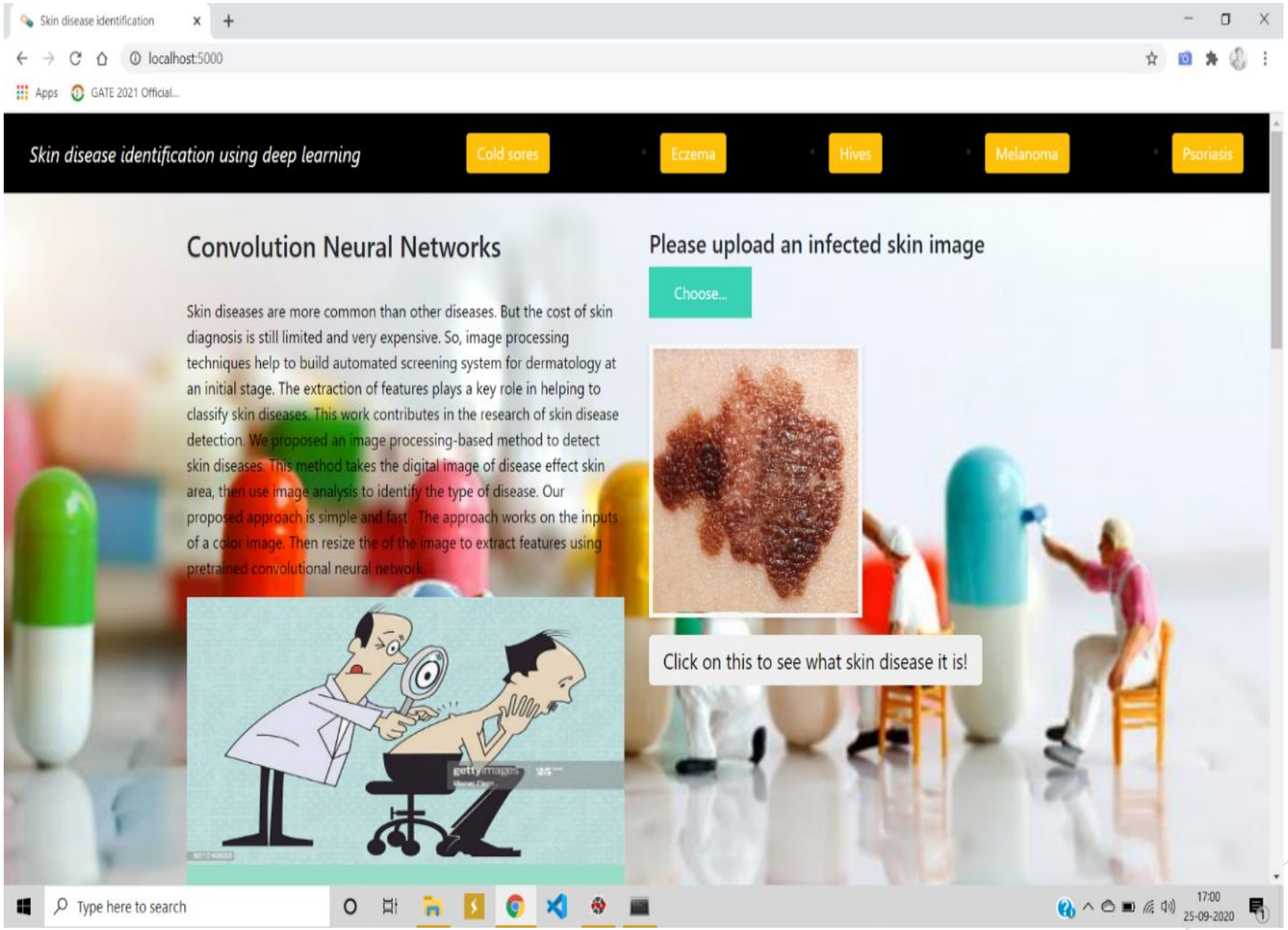
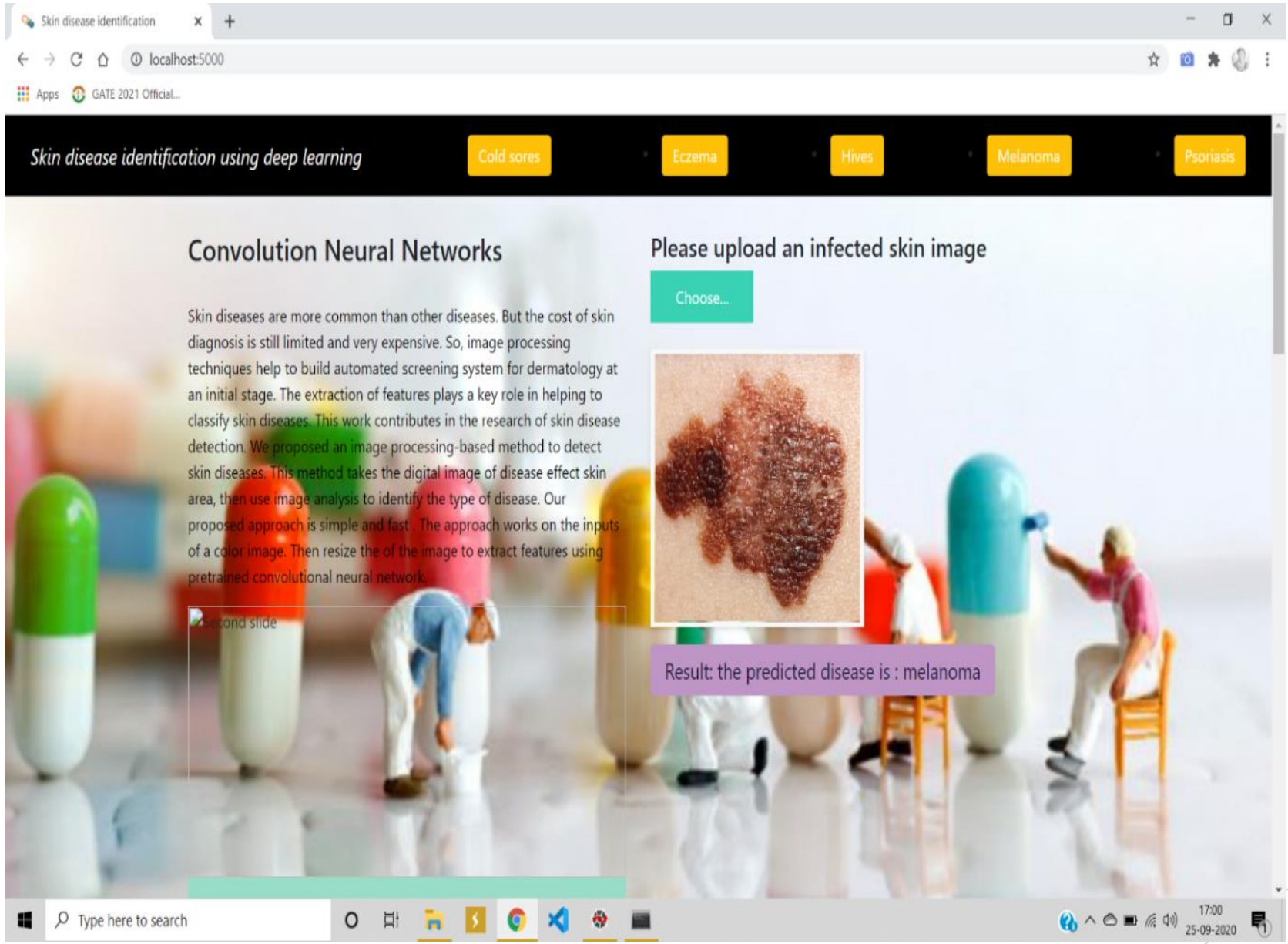
ch of skin disease
hod to detect
ease effect skin
area, then use image analysis to identify the type of disease. Our proposed approach is simple and fast . The approach works on the inputs of a color image. Then resize the of the image to extract features using pretrained convolutional neural network.
Second slide
Type here to search
16:59
25-09-2020


Skin disease identification
localhost:5000
Apps
GATE 2021 Official...
Skin disease identification using deep learning
Cold sores
Eczema
Hives
Melanoma
Psoriasis
Convolution Neural Networks
Skin diseases are more common than other diseases. But the cost of skin 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. 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 and fast . The approach works on the inputs of a color image. Then resize the of the image to extract features using pretrained convolutional neural network.
Please upload an infected skin image
Choose...
Click on this to see what skin disease it is!
Type here to search
17:00
25-09-2020


Skin disease identification
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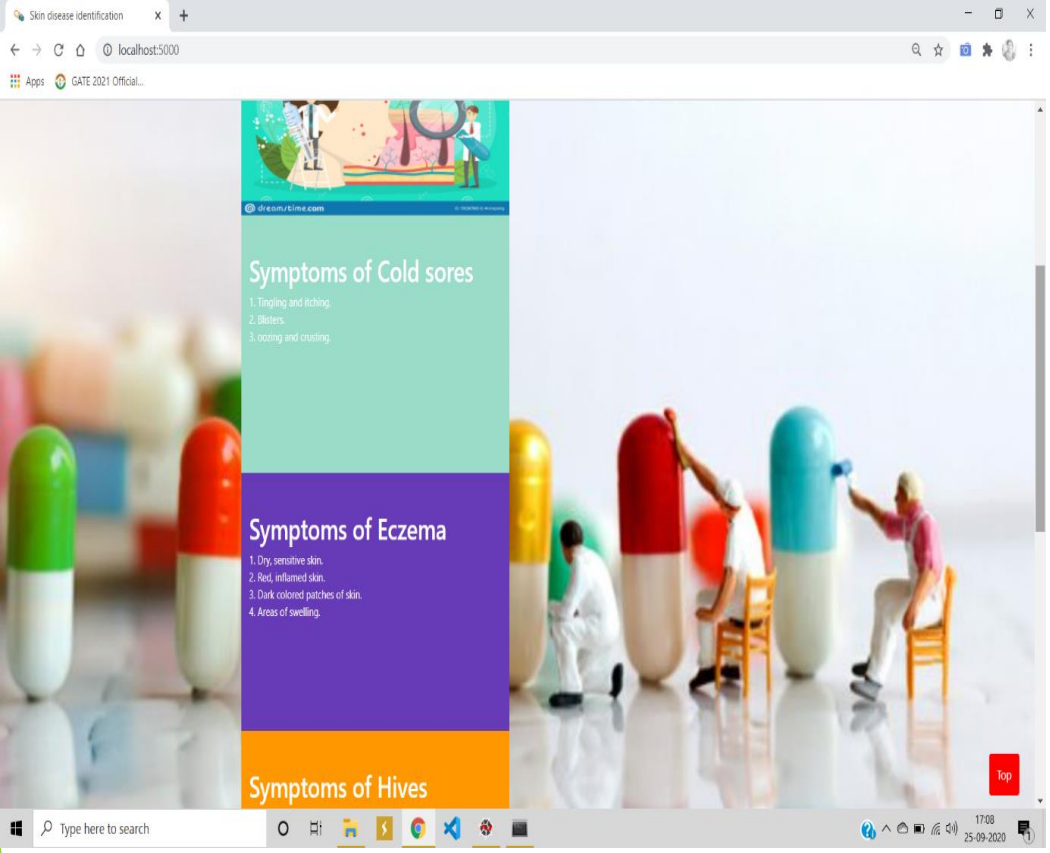
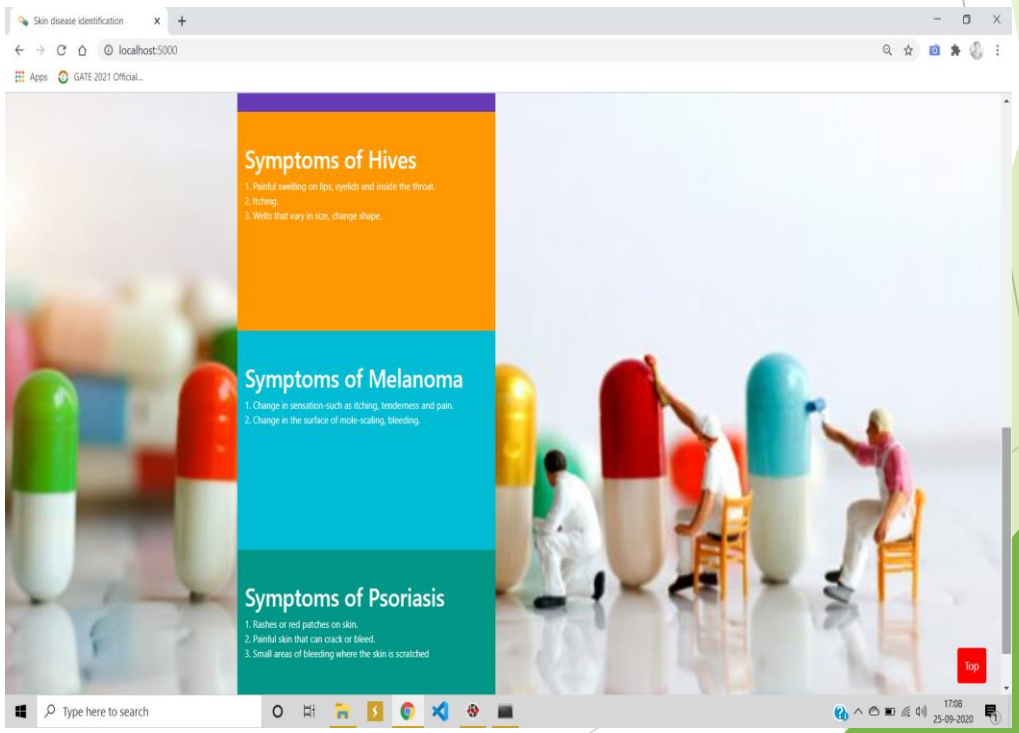
Second slide
Please upload an infected skin image
Choose...
Result: the predicted disease is : melanoma
Type here to search
17:00
25-09-2020


Skin disease identification
localhost:5000
Apps
GATE 2021 Official...
dreamstime.com
Symptoms of Cold sores
1. Tingling and itching.
2. Blisters.
3. oozing and crusting.
Symptoms of Eczema
1. Dry, sensitive skin.
2. Red, inflamed skin.
3. Dark colored patches of skin.
4. Areas of swelling.
Symptoms of Hives
Top
Type here to search
17:08
25-09-2020


Skin disease identification
localhost:5000
Apps
GATE 2021 Official...
Symptoms of Hives
1. Painful swelling on lips, eyelids and inside the throat.
2. Itching.
3. Welts that vary in size, change shape.
Symptoms of Melanoma
1. Change in sensation-such as itching, tenderness and pain.
2. Change in the surface of mole-scaling, bleeding.
Symptoms of Psoriasis
1. Rashes or red patches on skin.
2. Painful skin that can crack or bleed.
3. Small areas of bleeding where the skin is scratched
Top
Type here to search
17:08
25-09-2020

FUTURE SCOPE

- We can integrate IOT with deep learning to make it more effective and convenient.
- This process can be extended to make this model a standard procedure for preliminary skin disease diagnosis method as it will reduce the treatment and diagnosis time.

CONCLUSION

Detection of skin diseases is a very important step to reduce death rates, disease transmission and the development of skin disease. Clinical procedures are very expensive and time consuming. Convolutional neural networks and 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.

BIBLIOGRAPHY

1. WHO, 1997. Improving Child Health. Integrated Management of Childhood Illnesses: the Integrated Approach. World Health Organization, Geneva, WHO/CHD/97.12.
2. WHO, Epidemiology and Management of Common Skin Diseases in Children in Developing Countries
3. Classification of breast cancer histology images using Convolutional Neural Networks. [Teresa Araújo ,Guilherme Aresta ,Eduardo CastroJosé Rouco,Paulo Aguiar,Catarina Eloy,António Polónia,Aurélio Campilho]
4. IEEE,Medical image classification with convolutional neural network