Skin Disease Detection System

USING DEEP LEARNING

Group ID: PCSE25-07

Group Member: Adarsh Pathak Roll No.:2100290100010 Department: CSE
Group Member: Aditya Kumar Roll No.:2100290100014 Department: CSE
Group Member: Abhishek Singh Roll No.:2100290100009 Department: CSE

Name of Guide : Mr. Samir Sheshank

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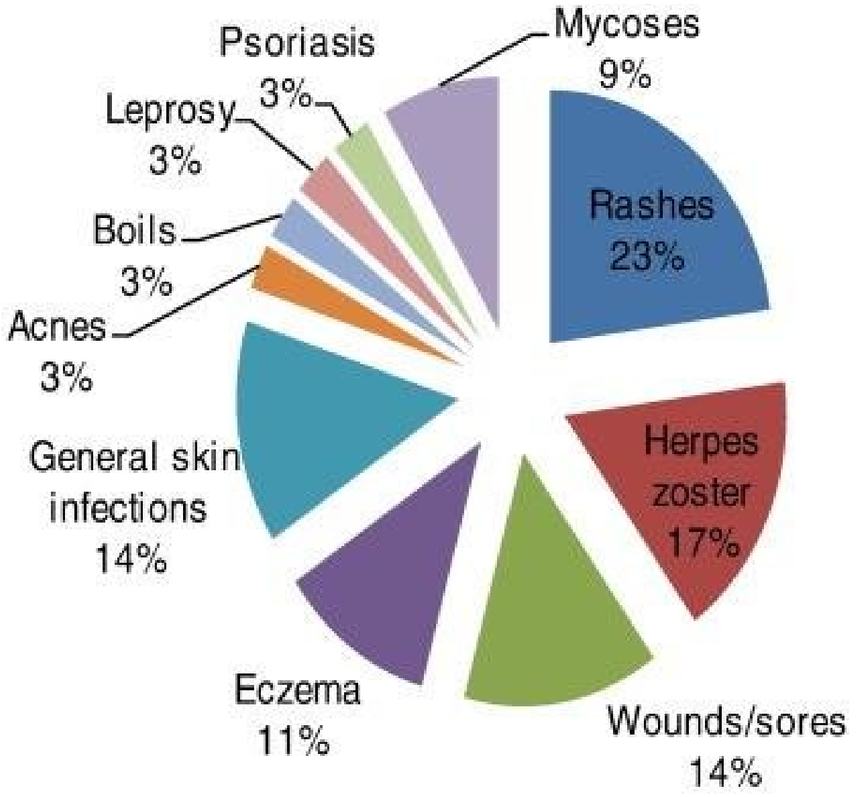
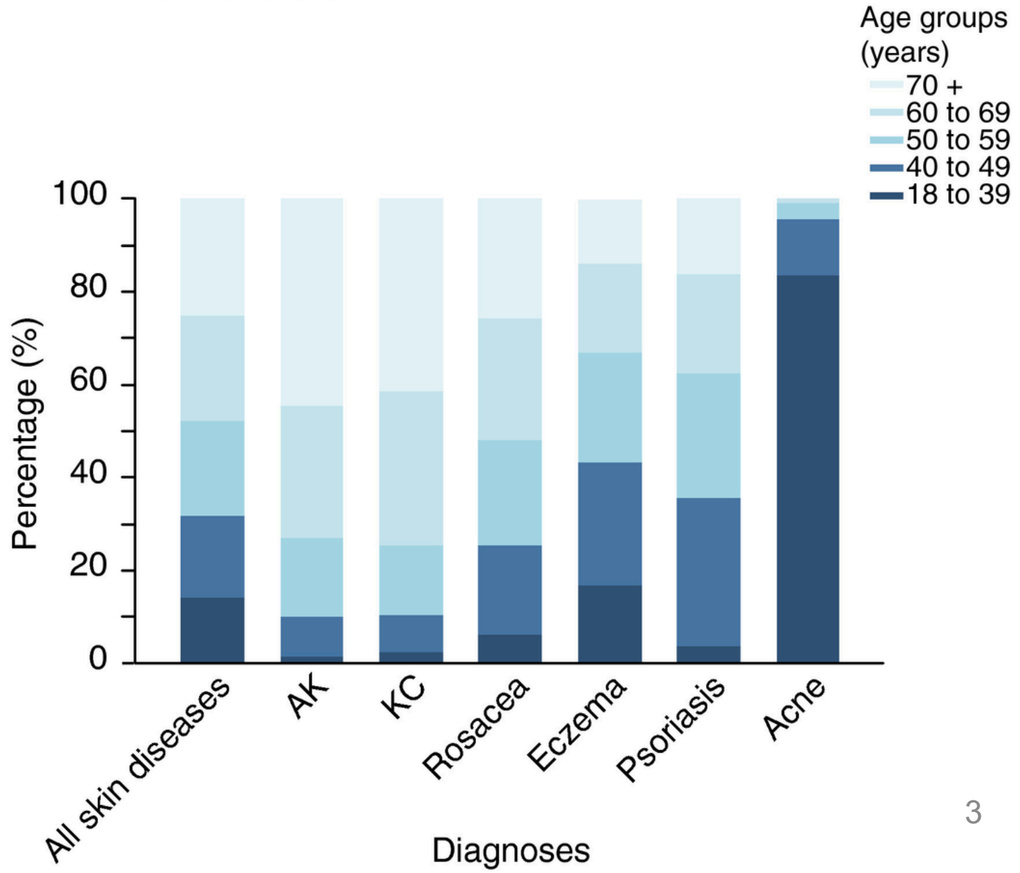
Problem Statement

Skin diseases are more common than other disease. According to World Health Organization (WHO), around 30% to 70% of the population has fallen victim to skin disease.Skin disease may be caused by fungal infections,bacteria,allergy, or viruses etc.The existing methods for diagnosing skin diseases heavily rely on manual examination by dermatologists, which can be time-consuming, subjective, and may lead to misdiagnosis or delayed treatment. The advancement of lasers and photonics based medical technology has made it possible to diagnose the skin disease much more quickly and accurately.But the cost of such diagnosis is still limited and very expensive. It is required to develop methods like deep learning in order to increase the accuracy of diagnosis for various types of skin diseases.

Statistics

Skin diseases are among the most common of all human health afflictions and affect almost 900 million people in the world at any time. Five common conditions account for over 80% of all skin diseases.





Project Objectives

Major Objectives of our Project:-

1. To detect skin disease using Image Processing and Deep learning.
2. To make a system which is fast,simple and does not requires expensive equipment.
3. To increase accuracy of skin disease detection.

Deep Learning

Deep learning is a method in artificial intelligence (AI) that teaches computers to process data in a way that is inspired by the human brain. Deep learning models can recognize complex patterns in pictures, text, sounds, and other data to produce accurate insights and predictions.

Deep Neural Network: The 3 Popular Types (MLP, CNN and RNN)

- Multilayer Perceptrons (MLPs)
- Convolutional Neural Network (CNN)
- Recurrent Neural Network (RNN

Convolutional Neural Network

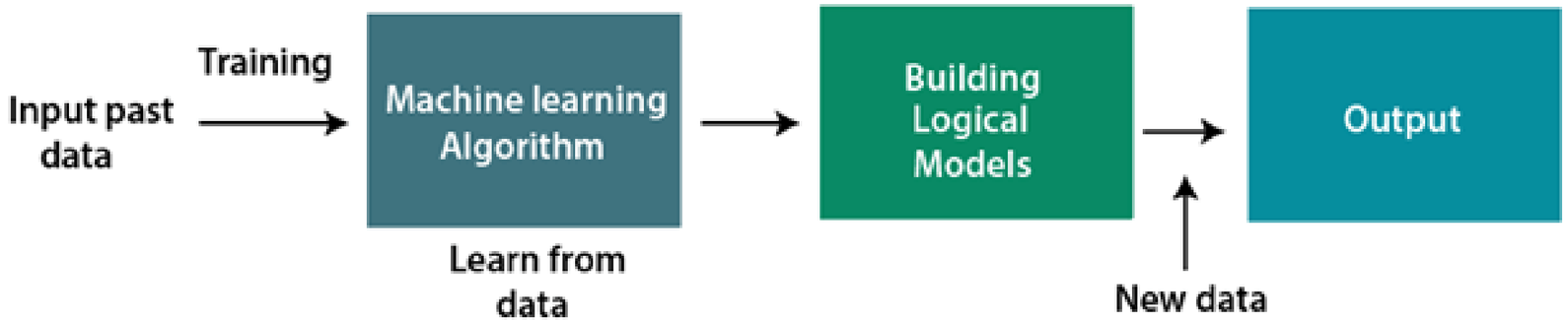
A convolutional neural network (CNN) is a type of artificial neural network used primarily for image recognition and processing, due to its ability to recognize patterns in images. A CNN is a powerful tool but requires millions of labelled data points for training.

A CNN typically has three layers: a convolutional layer, a pooling layer, and a fully connected layer.

Some of the techniques that have emerged from the study of dermatological testing literature are as follows:-

1. Image Processing: Dermatological testing relies on image processing techniques that can control the early detection of skin diseases and controlling their spread. Image processing involves a detection system designed to enable the detection and identification of skin diseases. In this case, the user must provide an image of the infected area, then the input is area pre-processed and filtered to remove noise and segmented to extract lesions, and finally image features are extracted and classified to classify trajectories of the infected area

2. Machine Learning: Dermatology detection uses machine learning to learn data, evaluate and predict provided data, and give accurate results in a very short time, thus promoting and supporting the development of dermatology. Existing techniques for the detection of skin diseases are ANN (Artificial Neural Network), BPN (Backpropagation Network), SVM (Support Vector Machine).



3. Convolutional Neural Network: Detection of skin diseases at the Using a Convolutional Neural Network An Image Classifier Using Software Diagnosis Disease. If no disease is detected, the system will return a negative result. So all detection is based on a convolutional neural network.

4. Deep Learning: Skin disease detection relies on deep learning for early detection of skin diseases such as skin cancer. Deep learning techniques are considered the most complex subfield of machine learning, involving artificial neural network algorithms. These algorithms are inspired by the structure of the brain. deep learning techniques are also applied in many other fields.

5. Computer Vision: Here skin disease recognition is done by image processing and machine learning techniques. User provides the image of the infected area as input, as and when as the next step image preprocessing technique is performed and extracts the feature values from the image, then classifies what type of disease it is. It is very beneficial for areas that do not have dermatological facilities.

Traditional Methods vs. Machine Learning

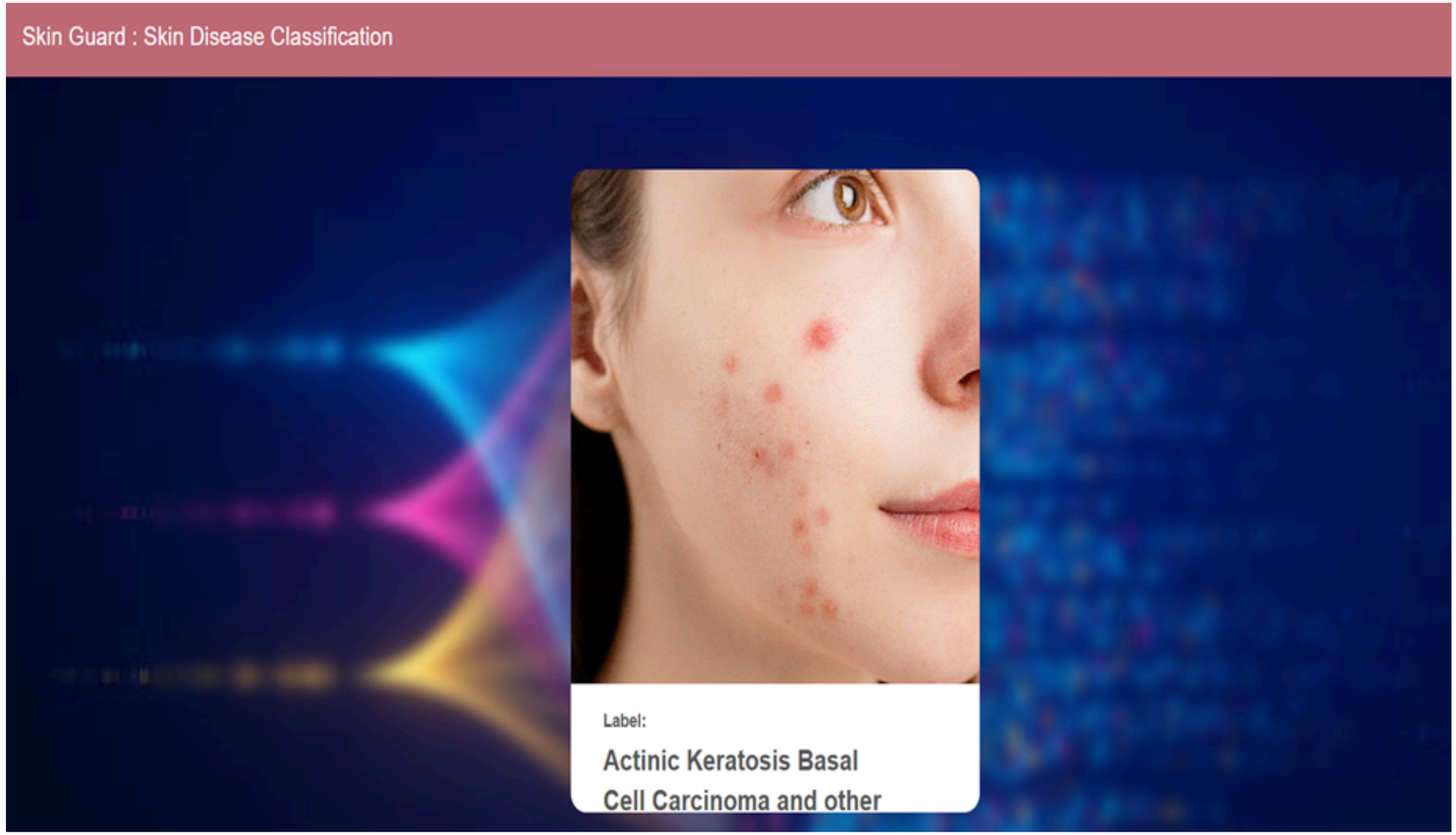
Current methods of diagnosing skin diseases involve visual inspection by a dermatologist, which can often lead to misdiagnosis or delayed diagnosis.

Traditional methods rely on visual analysis, subjective interpretation, and human error, while deep learning uses algorithms to analyze large amounts of data and identify patterns.

Hyperparameter for Model :-

Hyper-parameter	Value
Image size	256 x 256
Epochs	30
Batch size	32
Optimizer	Adam

User Interface(UI) for Model :-



THANK YOU!!