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Diabetic Curable Plant Recognization for Drug Industry Using CNN

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ABSTRACT: For the agricultural industry as a whole, plant categorization systems may be useful tools, especially when it comes to precisely and methodically identifying various plant kinds. In the past, plant breeders used observation and knowledgeable workers to distinguish between plant kinds. However, other plant parts, including leaves and branches, have traits that are almost similar, making identification challenging. Consequently, a system that can handle this issue is required. This study's goal is to categories plant leaves using convolutional neural network (CNN) methods. Given their comparable leaf structures, parsley and cilantro were chosen for this investigation. The input picture is subjected to a CNN-based multi-layer filtering process. For this investigation, 100 images of coriander and parsley leaves were gathered. The core was used to filter these images. These fixed- size kernels produce feature maps by identifying characteristics in the input pictures. Plant leaves will subsequently be classified based on their class type using these extracted attributes. A graphical user interface will allow the user to select the sheet type (GUI). The results show that by using a ReLu activation layer with a 15-layer lattice design and a train-to-test ratio of 70-30, the plant leaf classification system can reach 90% classification accuracy for cilantro and parsley with an error rate of 0.1. The method may be expanded to additional purposes including recognizing plant diseases and species due to its high accuracy.

I.INTRODUCTION

Using Ayurveda expertise, new plant-based medications may be discovered. Finding out what an NCE is the first step in developing a new medicine. NCEs can be produced chemically or extracted from herbal items under the guidance of experts by biological fractionation. Some of the active components and some of the elements of new medications come from herbal plants. It is necessary to identify potential candidate plants through Ayurveda expertise, documented traditional use, unrecorded tribal use, and a thorough review of scientific literature in order to start the development of new herbal medicines. [3] Analyzing the component frequency. Insight into the prevalence of specific Ayurveda qualities can be gained from historically recorded formulations and examination of their Based on biological activity, ayurvedic qualities can be used to choose suitable candidate plants for full fractionation. It is also necessary to go from sequential to parallel extraction techniques in order to combine what is known about Ayurveda with what is known about finding novel medications. Standardized extracts or isolated bioactive chemicals from recognized plants can be produced using bioassay-guided fractionation, which can then be used to create novel medications. This strategy facilitates the hunt for new medications while saving time and money. The process of creating new medications is difficult, expensive, and time-consuming. An average new medicine takes 12 years and more than $1 billion in investment before it is used in hospitals. The primary objective of new drug discovery is to identify novel chemical entities (NCEs) that maybe utilized in the synthesis of drugs.

II.LITERATURE SURVEY

The pharmaceutical sector, environmental security, rural productivity and survival. Because it enables them to compare plants, botanists are intrigued by the various ways that leaves exhibit the same traits. It is difficult for computer vision to identify plants from images. There are numerous obstacles of all kinds, and there are numerous components of the plant that need to be recognized. In nature, there are numerous distinct plant species, each of which differs greatly with very minor variations between species. The needs of completely automated ecological monitoring systems have not yet been fully met by automated plant classification research, despite the fact that it has produced some useful results. Numerous investigations of all kinds have been carried out during the previous ten years to discover to

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recognize plants. Wu and co. [4] one of the best studies on plant identity ever conducted. Twelve structural characteristics were included among the top five geometrical parameters. The principal component analysis technique is then used to reduce the number of inputs to the probabilistic neural network. PCA is utilised in this instance to break the depth-photo curse. They developed a Flavia dataset with an average accuracy of 90.3%.

To identify the plant leaf, JyotismitaChaki, Ranjan Parekh, and Samar Bhattacharya employed a multi-layered technique. The techniques used to identify heterogeneous leaves using various visual characteristics are presented in this research. For colorful or no green leaves, they employed color- based modeling, while for simple green and compound green leaves, they used shape-based modeling [4].

T. J. Jassmann created a new 426 CNN in 2015. Instead of using the Rectified Linear Unit as theirnon-linearity approach, CNN experimented with the novel Exponential Linear Unit (ELU) (ReLU).

Introducing Windows phone software for leaf species identification is Aparajita Sahay and Min Chen. They used weighted KNN to analyse a batch of tagged picture data. Users of their programmer may take a picture of a single leaf on a pure white backdrop and upload it as an input image. The application will assess leaf characteristics and identify plant species in real-time [5].

AmalaSabu (2017) demonstrates how difficult it is for computer vision to recognise all leaves. A successful technique for removing the leaves from Ayurvedic plants might be useful for studies in botany and other fields of society, such as medicine. Check to see if you can identify the leaf in the images. the investigation of various leaf classification systems and methods of identification.

W.H.Rankothge and D.M.S.B Dissanayake proposed a system for identifying plants that uses neural networks and visual processing. Picture processing procedures include removing image noise, adjusting the leaf area to normal, reducing the undesired white background, and enlarging the leaf image. The procedure of extracting an image includes extracting the RGB colours, the leaf form, andthe leaf vein pattern. They are 95% accurate and provide results in a short period of time.[6]

Ghazi, M.M.,[6] employed three transfer learning models to describe the various plants' characteristics. The Network was assessed utilising LIFECLEF 2015. The inspiration for these three models came from GoogleNet, VGGNet, and AlexNet..

The investigation of the crucial factors that affect the architecture and effectiveness of deep neural networks employed in plant pathology was discussed by Barbedo, J.G. (2018).
A unique shape descriptor was put up by Bin Wang and Douglas as a speedier and more precise method of classifying plant leaves. They used their Leaf100 dataset as well as the well-known Swedish Leaf dataset. In comparison to current methodologies, their proposed approach can achieve more accuracy and 170 times faster speed.[7].

III.DATA SET

The well-known website for machine learning Kaggle High resolution photos of plant parts are a necessity for this research. These datasets must be manually gathered, which is a laborious procedure.

The collection of all these image databases can occasionally be an insurmountable effort. Due to the classification of plants, the common names, scientific names, medical applications, cultivation locations, and features of plant sections will be revealed. A photograph of arugula flowers seen in Figure 1. In Figure 2, a picture of a cloverleaf is displayed. The pictures below can be used to practise and test image classification skills. These photos are of excellent quality and retain.

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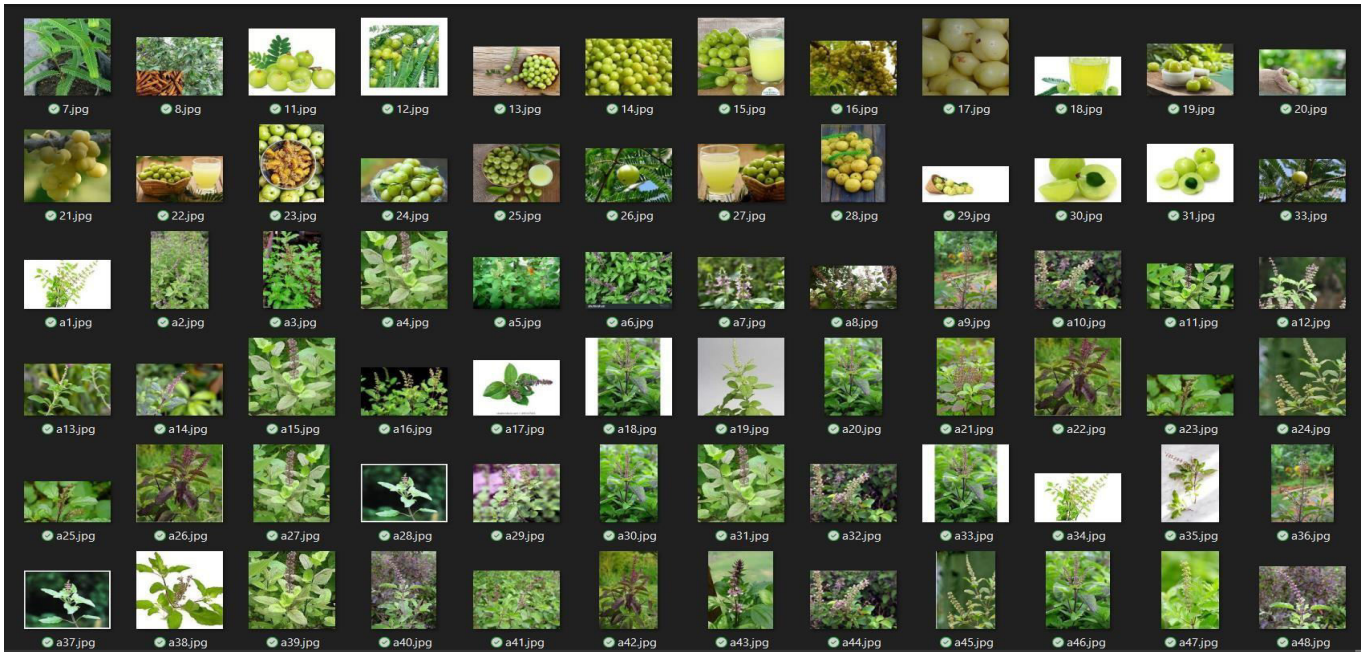

Figure 1: Image Data Set

IV.METHODOLOGY

The methodological data set contains a variety of entirely distinct plant photos. Photos of Neem may display various leaves from Amla, Lavender, and Tulsi, for instance, while Amla can have both leaves and fruits. Despite their similar appearance, tulsi and lavender have different purposes. The photos are all altered so that they render equally and don't mislead CNN about their true sizes. Photos are rotated horizontally to make it look that the model has more training pictures because deep learning systems are infamous for requiring a lot of training data. The convolutional neural network is one of the most frequently utilized models currently in use (CNN). One or more convolutional layers in this multilayer perceptron-based neural network computational model canbe merged or connected together in any way. These convolutional layers provide feature maps, which are output for nonlinear processing, and record picture areas that are finally subdivided into rectangles.

Advantages:

- Without human oversight, automatically identifies the key qualities.
- sharing of weight. CNN does not encode the location or orientation of an object, which is adrawback.
- Absence of spatial invariance in relation to the provided data.
- It requires a lot of training data.To achieve acceptable and accurate results in our project,we have used the following classification model: neural convolutional network The usage ofdifferent types of neural networks varies depending on the task at hand. For example, to predict the order of words, we use recurrent neural networks, namely an LSTM, and to classify images, we useconvolutional neural networks (CNN) [6].

Convents are made up of a number of layers, each of which transforms one volume into another by performing a particular set of operations. Types of layers

1. Input layer: The raw input for the image is located on this layer.
2. Computational layer: By computing the dot product between each filter and each image patch, this layer determines the output volume.
3. Layer of activation functions: In this layer, an element-wise activation function will be applied to the convolution layer's output. Activation processes like RELU, Sigmoid, Tanh, and

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Leaky RELU are often used. As this is a multi-classification problem, we employed both RELU and softmax in our model.

4. Pool layer: Its main objective is to reduce volume, which accelerates computation, requires less memory, and reduces overfitting. This layer is periodically added to convNets. Two common types of pooling layers are max pooling and average pooling.

5. Dense layer: It is the standard layer of a deeply connected neural network. The percentage of samples properly identified by the classifier to all samples in a given test data set is known as accuracy. Non-Linearity (ReLU) activation function was utilised. A non-linear process is referred to as a "rectified linear unit," or "ReLU." The outcome is x=max (0, x).

ReLU aims to give our ConvNet more nonlinearity. Our ConvNet would like to learn the non- negative linear values in real-world data. Given that this is a multi-class classification issue, we have employed the softmax function.

Architecture Schematic:

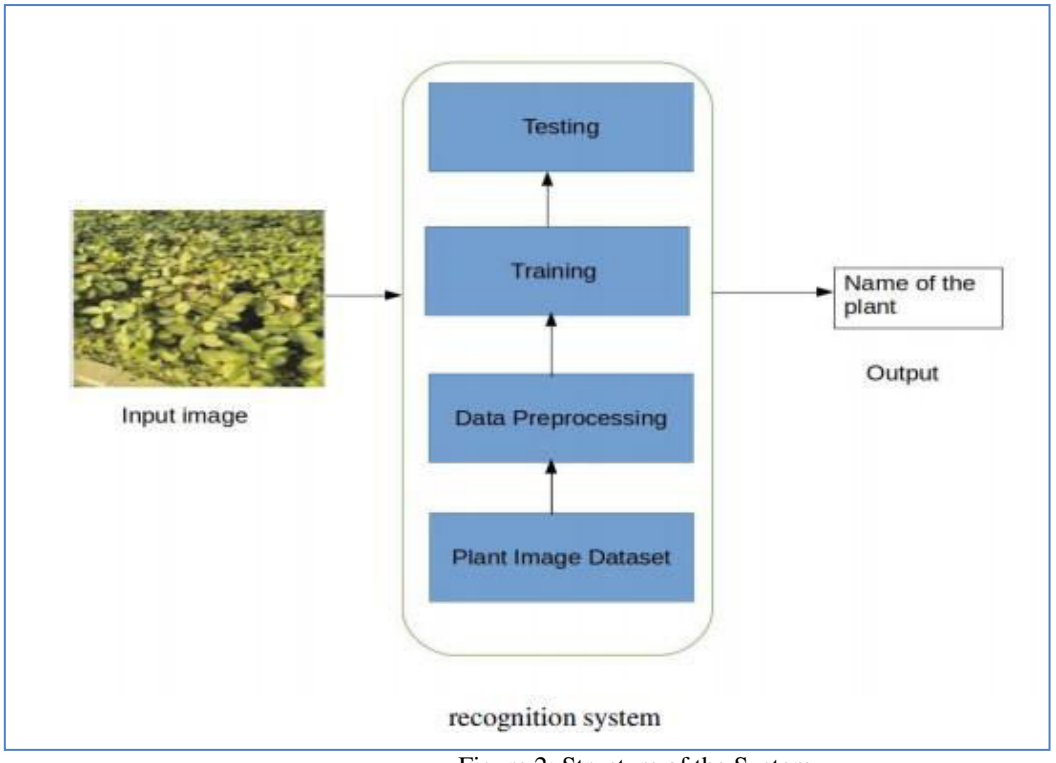

Figure 2: Structure of the System

The graphic above shows the proposed application's system architecture. It contains the many functional units that are listed. Here, MySQL and Apache are being utilized as the database andweb server, respectively.

V. EXPERIMENT AND OUTCOMES

Amla, commonly referred to as Indian gooseberry, was the first selection for the plant. It strengthens people's immune systems and aids in maintaining stable blood sugar. Tulsi, commonly referred to as holy basil, can aid in preventing blood glucose accumulation and issues related to diabetes. People with diabetes who use lavender oil can lower oxidative stress and blood sugar levels, which can prevent catastrophic complications. [6] Azadirachtaindica, another name for neem, is renowned for its antiviral and antioxidant characteristics that aid in blood sugar regulation.

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Amla, also known as Indian Gooseberry, is the first plant picked. Human immunity is strengthened, and blood sugar levels are maintained.

Tulsi or holy basil helps prevent blood glucose levels and issues brought on by diabetes.
In diabetic individuals, Blood sugar levels and oxidative stress, which might have detrimental effects, are reduced by lavender oil. Neem, also known as it is generally known that Azadirachta indica has antiviral and antioxidant properties qualities that aid in regulating blood sugar levels.

Figure 3: Technique to be used.

Author	Technique used	Dataset	Results
Barbedo, J.G(2018)	Concept of deep learning	Almost 50000 imagesuse from plant data set	Accuracy:81%
Amala Sabu (2017)	KNN	Review	Accuracy:80%
Kaya, A, Keceli (2019)	Transfer the learning method used on deeplearning	Using total number of54,306 images	Accuracy 98.70%

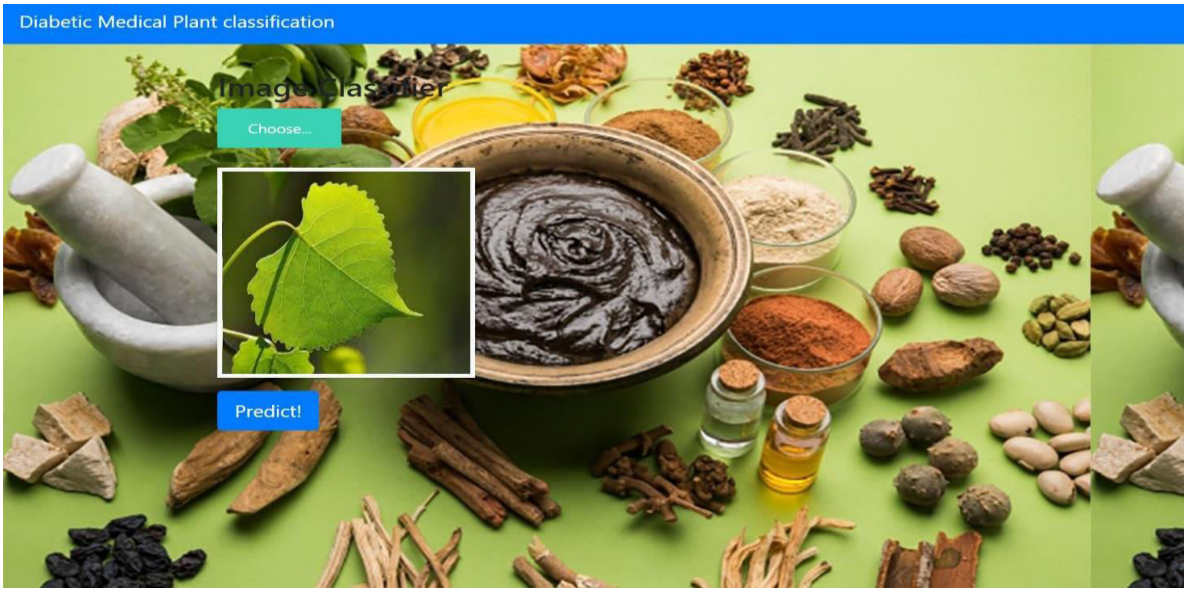

Figure 4: From used to categories the outcome

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Figure 5: Final Outcome 1

Figure 6: Final outcome 2

VI.CONCLUSION

Consequently, CNN's are employed in these studies to recognise plants. In addition, we offer guidelines and techniques for further enhancing CNNs supplied in legitimate applications. There have been several distributed arrangements that use CNNs. In India, natural medicine plays a significant role in healthcare, and healing herbs serve the general welfare. Don't forget to store for actual usage. To categories photos using an open cv library and increase the accuracy of the findings, the suggested solution additionally incorporates transfer learning techniques with the RESENET 50 model. I'm hoping that this project can deliver what clients are expecting while also meeting real-time needs.

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VII.FUTUREWORK

Demonstrates how to quickly categories plants and weeds with just a few picture data. This approach differs from all other current techniques, such as transfer learning, because it was essentially created from start. The neural networks performed well in classifying each variety of plant after being trained on a dataset comprising three species. The accuracy, loss, and accuracy of the test dataset were 98.07%, 93.30%, 45.13%, and 83.33% respectively, demonstrating the model's efficacy. As a result, it takes a lot of study to find solutions to these problems.

REFERENCES

[1] 1. Pešić, M. (2015). Development of natural product drugs in a sustainable manner. Brief for United Nations Global Sustainable Development Report 2015.

[2] Bauer, A., Brönstrup, M. (2014). Industrial natural product chemistry for drug discovery and development. Natural Prod. Rep. 31 (1), 35–60. DOI: 10.1039/C3NP70058E

[3] Gao, W. and Lin, W., 2012. Frontal Parietal Control Network Regulates the AntiCorrelated Default and Dorsal Attention Networks. Human Brain Mapping, 33(1), 192–202.

[4] Wu, S.G., Bao, F.S., Xu, E.Y., Wang, Y.X., Chang, Y.F. and Xiang, Q.L., 2007. A Leaf Recognition Algorithm for Plant Classification using Probabilistic Neural Network. 7th IEEE International Symposium on Signal Processing and Information Technology, Giza, Egypt, 11- 16.

[5] Zhang X., Liu Y., Lin H., Liu Y. (2016) Research on SVM Plant Leaf Identification Method Based on CSA. In: Che W. et al. (eds) Social Computing. ICYCSEE 2016. Communications in Computer and Information Science, Vol 624, Springer, Singapore.

[6] Hossain, J. and Amin, M.A., 2010. Leaf Shape Identification Based Plant Biometrics. 13th International Conference on Computer and Information Technology, Dhaka, Bangladesh, 458-463.

[7] Du, J.X., Wang, X.F. and Zhang, G.J., 2007. Leaf shape-based plant species recognition. Applied Mathematics and Computation, 185, 883-893.

[8] Du, M., Zhang, S. and Wang, H., 2009. Supervised Isomap for Plant Leaf Image Classification. 5th International Conference on Emerging Intelligent Computing Technolgy and Applications, Ulsan, South Korea, 627-634.

[9] Herdiyeni, Y. and Wahyuni, N.K.S., 2012. Mobile Application for Indonesian Medicinal Plants Identification using Fuzzy Local Binary Pattern and Fuzzy Color Histogram. International Conference on Advanced Computer Science and Information Systems (ICACSIS), West Java, Indonesia, 301-306.

[10] Arai, K., Abdullah, I.N. and Okumura, H., 2013. Identification of Ornamental Plant Functioned as Medicinal Plant-based on Redundant Discrete Wavelet Transformation. International Journalof Advanced Research in Artificial Intelligence, 2(3), 60-64.

[11] Prasvita, D.S. and Herdiyeni, Y., 2013. MedLeaf: Mobile Application for Medicinal Plant Identification Based on Leaf Image. International Journal of Advanced Science, Engineering and Information Technology, 3, 5–8.

[12] Le, T.L., Tran, D.T. and Hoang, V.N., 2014. Fully Automatic leaf-based plant identification, application for Vietnamese medicinal plant search. Fifth Symposium on Information and Communication Technology, Hanoi, Vietnam, 146-1514.

[13] Bhatt K.K.S. 1995. Medicinal Plant Information Databases. Non-wood Forest Product FAO – Food and Organisation of the United Nations, Viale dells di Caracalla, 00100 Rome, Italy.

[14] .Flavia medicinal plant species dataset, website: http://flavia.sourceforge.net/, accessed on 01/01//2018.

[15] A Hand Book of Medicinal Plants – A Complete Source Book. Agrobios (India), Jodhpur. Purohit S.S. and Vyas S.P. 2004.

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