DIABETIC CURABLE PLANT RECOGNITION USING CNN

[1]Dr.Harish B G, [2]Mr.Chetan Kumar G S, [3]Sabeeha Banu N R, [4]Sushma N

[1]Professor, [2]Assistant Professor,[3,4]Students
Department of MCA
University BDT College of Engineering
Davangere-577004, India

Abstract -**The medication business balance the environment as well as the farming efficiency and manageability. Botanists are keen on the minor departure from leaf qualities as it assists them with doing a similar to the investigation on plants. Acknowledgment of Plant from pictures is a difficult PC vision task. The different kinds of difficulties are many pieces of the plant, which should be distinguished, are additionally assorted in nature with high intra class varieties and little entomb class varieties. Albeit the exploration on programmed plant scientific categorization has delivered productive outcomes, however those models are still distant from the prerequisites of a completely robotized natural reconnaissance situation.**

INTRODUCTION

Ayurvedic astuteness can synergize with drug disclosure from plant sources. Starting strides in new medication revelation include ID of NCEs, which can be either obtained through synthetic combination or can be segregated from normal items through natural action directed fractionation. The wellsprings of a significant number of the new medications and dynamic elements of prescriptions are gotten from normal items. The beginning stage for plant-based new medication revelation ought to be distinguishing proof of the right competitor plants by applying Ayurvedic intelligence, customary reported use, ancestral non-archived use, and thorough writing search. Recurrence examination of the elements of the old archived details and investigation of their Ayurvedic credits might give a top to bottom thought of the prevalence of specific Ayurvedic attributes in view of which suitable competitor plants might be the and chosen for bioactivity-based fractionation. The reconciliation of Ayurvedic shrewdness with drug revelation likewise brings the requirement for a change in outlook in the extraction cycle from successive to resemble extraction. Bioassay-directed fractionation of the recognized plant might prompt normalized remove or confined bioactive druggable compound as the new medication. This coordinated methodology would prompt saving of cost and time, combined with upgraded achievement rate in drug disclosure.

Improvement of new medication is a complex, timeconsuming, and costly cycle. The time taken from disclosure of another medication to it'sreaching the facility is roughly 12 years, including more than 1 billion of interests in the present setting. Basically, the new medication disclosure includes the recognizable proof of new synthetic elements (NCEs), having the expected attribute of druggability and restorative science. These NCEs can be obtained either through synthetic union or through disengagement from regular items. Starting examples of overcoming adversity in new medication revelation came from restorative science creations, which prompted the need of improvement of bigger number of substance libraries through combinatorial science. This methodology, be that as it may, was demonstrated to be less powerful as far as in general achievement rate.

The second wellspring of NCEs for possible use as medication particles has been the normal items. Before the coming of high throughput screening and the post genomic time, over 80% of medication substances were simply normal items or were motivated by the particles got from regular sources (counting semi-engineered analogs).

LITERATURE SURVEY

Diagnosis of the chest x-ray to pick up the inferences is a skillful task and requires expertise in the job. Several images may get misinterpreted as different diseases since the images will be unclear and ambiguous. India faces shortage of these skilled radiologists to meet the growing demand due to increase in population and hence leading to poor access to health care especially in remote areas and over burden on the currently serving professionals. Developing an artificial intelligence powered system to diagnose and reportthe results will help us to extend the access to healthcare to the remotest part of the countryand help us in saving lives.

The pharmaceutical industry balances ecosystems with farming efficiency and manageability. Botanists are keen onleaf attributes changing because they are useful for comparative analysis of plants. Identifying plants from images is a challenge for computer vision. The different types of challenges are many parts of the plant that need to be identified, and are also diverse in nature, with high variability within the class and small variability between classes. Although studies of automated plant taxonomy have delivered productive outcomes, these models are still distant from the necessities of completely robotized environmental monitoring scenarios.

Manojkumar P, Surya Cetal. [1] Collected 20 random Ayurvedic front and back leaves from 40 different species. Weka tools are used to identify medicinal plants using machine learning algorithms. Leaf color and texture features are extracted from color and binary images. Support Vector Machine (SVM) and Multilayer Perceptron (MLP) classifiers distinguish leaves in view of geometry, center of gravity (CR) distance, color highlights, surface elements, HU invariant minutes, and Zernike minutes.Used for MLPs (94.5%) are better trained than Support Vector Machines **(**SVMs**).**

The authors proposed a system that recognizes medicinal leaves using neural networks [2]. There are five possible leaves of medicinal plants. Sheet edge detection is performed by the prewit edge detection algorithm. The data are trained by an artificial neural network (ANN) classifier, and Bilba leaves (90.584%) and caster leaves (83.084%) show superior accuracy compared to other leaves.
Using machine learning techniques, Adams Begue et al. proposed a strategy for programmed recognizable proof of therapeutic plants [3] utilizing features. Five different classifiers are used for classification purpose. Among them 90.1curacy is obtained from random forest classifier than knearest neighbour, naive Bayes (NB), SVM and neural networks.To identify and classifying the medicinal plants in Traditional Chinese Medicine (TCM) [4] system, shape features and texture features of leaves are considered. The extracted features are fed **to** a Support Vector Machine (SVM) classifier with a recognition accuracy of 93.3%. Flower texture and color features are extracted from GrayLevel Cooccurrence Matrices (GLCM) and ColorMoment.
The extracted features are fed to the neural network classifier [5]. The individual accuracy of GLCM and color moments is 40% and 65%. The accuracy of the hybrid combination is 95%. The authors examined three different datasets for classifying flowers based on color and shape characteristics: Oxford Flower 17, Oxford Flower 102 and Jena Flower 30 [6]. Various methods are used for flower fusion, pooling, extraction and detection. Compared to the other two datasets, the Jena Flower 30 dataset has the highest classification accuracy of 94%.
A student in telecommunications engineering [7] has developed an automated mango fruit recognition system using edge-based and color-based segmentation techniques. K stands for clustering and smart edge detection methods used in image segmentation. Colorbased algorithms are superior to edge-based algorithms, providing 85%.
In a paper [8], the author outlined the following classification methods used to identify medicinal plants: stochastic neural networks, support vector machines, and principal component analysis. In their proposed study, they took neem leaf shape, color, and particle properties and calculated leaf aspect ratio, center of gravity, area, perimeter, and roundness properties for identification. To develop a fruit recognition system [9], the author examined the shape, color, and texture characteristics of the fruit. The extracted features are trained by three different classifiers: K-nearest neighbors (kNN), binary classification tree, and support vector machine (SVM). Best yield of results with SVM classifier with
New approaches have been proposed for classifying Ayurvedic plants in view of leaf morphological attributes. The author created a 208 image dataset using 26 different species. The Laplace filter method is used for edge detection. Leaf coefficients are calculated from the morphological characteristics of leaf images and find the best matching leaf from training and test databases [10].
The proposed algorithm provides 93.7% accuracy. Sana OM and R. Jaya have developed a mobile application [11] on the Android platform for identifying Ayurvedic herbs. This framework recognizes restorative plants in view of a given leaf image. GrayLevel Cooccurrence Matrices (GLCM) are used for texture extraction and image processing techniques are used for plant species classification. This device is free, saves cost and time and does not require professional help. Helps identify and obtain information about plant species in the botanical horticulture, medical and cosmetics industries. The Gray Level, Dim Tone Space Reliance Matrix (GTSDM) and Local Binary Pattern (LBP) features are used to classify therapeutic plants based on leaf images. The dataset contains 5 plant species with 250 different leaf images. Extracted features include stochastic gradient descent (SGD), k-nearest neighbor (KNN), support vector machine (SVM), decision tree (DT), extra tree (ET), arbitrary woodland (RF), etc. It is classified using a different classifier. Mean, standard deviation, variance and skewness are calculated from the gray level. Entropy and average are calculated from GTSD and LBP, respectively. Various combinations are made using these calculated properties to classify medicinal plants. The SGD, DT, and kNN classifiers are be achieved 94.7% performance accuracy. The authors conclude that direct feature extraction provides better accuracy than pretreatment for identification and classification of medicinal plants..

EXISTING SYSTEM

The previous models have high time complexity and space complexity model is constrained with the lot of advantages and with a higher accuracy than any other model already proposed. In this model we used Deep learning-based conventional neural network where the image analysis is done for the appropriate clause, an user friendly user interface to check sentiment prediction score, and parcel of the past models have excluded the UI (User interface) which is so friendly and convenient for the users

PROPOSED SYSTEM

In profound learning, a convolutional brain organization (CNN, or ConvNet) is a class of profound brain organizations, generally regularly applied to examining visual symbolism. They are otherwise called shift invariant or space invariant counterfeit brain organizations (SIANN), in light of their common loads in engineering and in interpretation invariance qualities.They are have applications in the picture and video acknowledgment, recommender frameworks, picture characterization, clinical picture examination, normal language handling, and monetary time series.

THEORETICAL ANALYSIS

The dataset contained images of medicinal plants like amla, neem, lavender, tulsi, eastern cottonwood, and silver maple out of which, amla, neem, lavender, and tulsi are known to help maintain diabetes unlike the eastern cottonwood and silver maple trees that cannot help in maintaining diabetes. The dataset was then parted into preparing and testing parts utilizing train_test_split. Here comes the primary execution of our undertaking, i.e., the CNN fabricated utilizing tensorflow and keras.

Python language to examine the provided input dataset files and work according to the predefined algorithms to mine the data and to generate the required output. For searching patterns of concentration in particular system or set of representation, classification rules, decision tree, regression, clustering, so forth methods are used.

METHODOLOGY

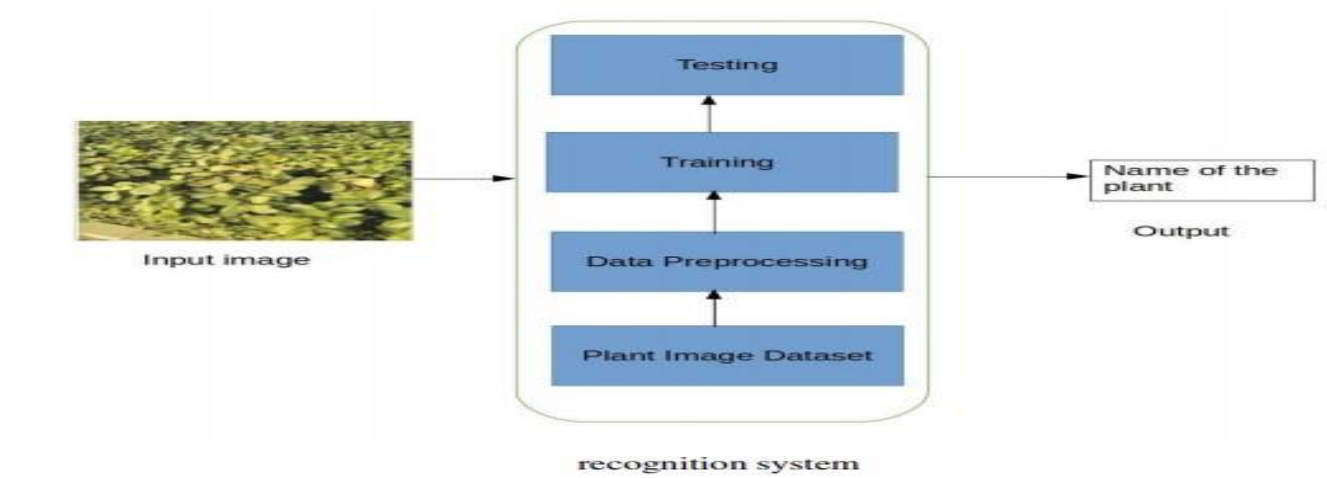


Fig: Architecture of plant recognition system.

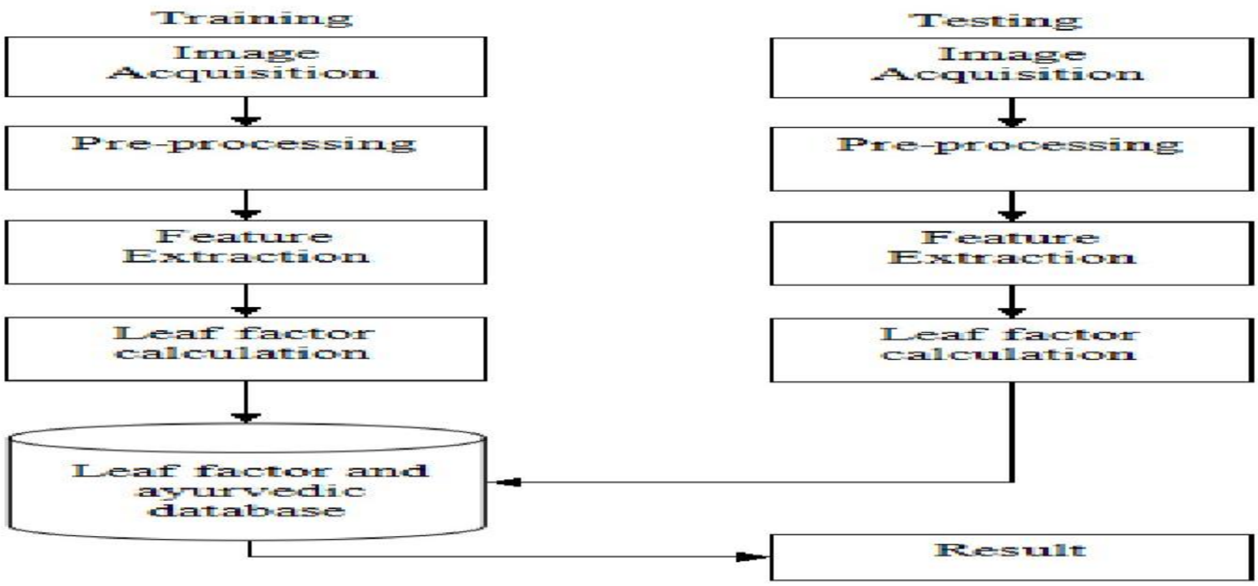
The dataset consists of plant images that are quite different from each other. For instance, Amla would have leaves and fruit together and Neem images would have leaves that are different from those of Amla or Lavender and Tulsi. and Lavender might look similar but have different features. To not mislead the CNN with different image sizes, all the images are resized to help the model produce a consistent result. As it is realized that Deep Learning techniques include a ton of preparing information, pictures are flipped evenly to make a deception of additional preparation pictures to the model.

Tools And Technologies

- Jupyter IDE
- Deep learning algorithm
- HTML
- Flask

We fostered this plant recognition system by utilizing the Python language which is a deciphered and undeniable level programming language and utilizing the Deep Learning calculations. For coding the Anaconda distributions and the jupyter, it is a coordinated logical programming in the python language. For creating a user interface for the prediction, we used the Flask. It is a miniature web system written in Python. It is delegated a microframework since it doesn't need specific apparatuses or libraries. It has no data set deliberation layer, structure approval, or whatever other parts where previous outsider libraries give normal capacities, and a prearranging language to make a website page is HTML by making the layouts to use in the elements of the Flask and HTML.

FLOW CHART



Pooling layers are utilized to lessen the elements of the component maps. Hence, it lessens the quantity of boundaries to learn and how much calculation acted in the organization. As such, the pooling layer sums up the elements present in a district of the component map produced by a convolution layer. The last layer of the CNN is the Flatten layer that is expected in changing over the information into a 1-layered exhibit for contributing it to the following layer.

RESULT AND DISCUSSION

In this paper, a Deep Learning-based Convolutional Brain Network (CNN) has been utilized to anticipate the result whether a plant can help in maintaining diabetes or not.

Experimental Investigation

In this paper, the dataset we utilized was made all alone and it contains about 600 images of plants related to diabetes.

Advantages:

- Easy and simple User Interface for anybody who wants to know which plants can help maintain diabetes, especially doctors.
- CNN model gives a 96% accuracy on an average result of the prediction.
- It is widely used for managing analysis in the visual data system.
- It is composed using the HTML and Python in real time.
- It can work in real time and predict as soon as the necessary image for the image prediction are given to the model.

Disadvantages:

Needs huge amount of data for the prediction.

CONCLUSION

The works that utilized CNNs to recognize naturally plants. We likewise gave rules and methods to continue to expand the capability of CNNs sent in genuine applications. Numerous alreadypublished arrangements in light of CNNs are done. Home grown prescriptions possess a crucial area of medical care framework in India and therapeutic plants address a significant public asset. Guaranteeing their protection for economical utilization is significant.

REFERENCES:

[1] 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.

[2] Bhatt R.C. 2002. Farmers are ready to cultivate medicinal, aromatic and other economic species in Uttaranchal. MFP News XII: 13–14. Krishna Kumar A. and Katakam A. 2002. Credit for conservation. Frontline 19: 9–22. Myers N., Mittermeier R.A., Mittermeier C.G., daFonseca G.A.B. and Kent J. 2000. Biodiversity hotspots for conservation priorities. Nature 403: 853–858. Nair G.K. 2002. KAU plans to develop medicinal plants. The Hindu Business Line – Financial Daily from the Hindu Group of Publication May 17, Friday.
[3] Nayar M.P. 1996. Hotspots of Endemic Plants of India, Nepal and Bhutan, have Thiruvananthapuram, TBGRI. Vedams eBooks, New Delhi, India. Prajapati N.D., Purohit S.S., Sharma A.K. and Kumar T.
[4] A Hand Book of Medicinal Plants – A Complete Source Book. Agrobios (India), Jodhpur. Purohit S.S. and Vyas S.P. 2004.
[5] Medicinal Plant Cultivation: A Scientific Approach including Processing and Financial Guidelines. Agrobios (India), Jodhpur. Rao C.K., Geetha B.L. and Suresh G. 2003. Red list of Threatened Vascular Plant Species in India. Director, Botanical Survey of India, ENVIS Centre for Floral Diversity, Botanical Survey of India, Central National Herbarium, Indian Botanic Garden, Howrah (India).
[6] Rodgers W.A. and Panwar H.S. 1990. They are the Biogeographical Classification for the Conservation Planning. Wildlife Institute of India, Dehradun, India. Sanjappa M. 2004. Medicinal Plants and their Conservation with Reference to Peninsular of the India. Seminar Proceedings of National Seminar on Medicinal Plants, Plant Products & Patents,At 30th September–3rd October, Kolkata, India 2003.
[7] Manojkumar P., Surya C. M. und Varun P. Gopi, "Identification of Ayurvedic Medicinal Plants by Image Processing of Leaf Samples", 2017 3rd International Conference on Computational Intelligence and Communication Network Research (ICRCICN), S.9781538619315.
[8] Herr K. Nithiyanandhan und Prof. T. Bhaskara Reddy, "Analysis of Medicinal Leaves Using Image Processing Techniques and ANN", Band 8, Nr. 5, ISSN R. 09765697, Mai / Juni 2017.
[9]Adams Begue, Venitha Kowlessur, Fawzi Mahomoodally, Upasana Singh und Sameerchand, "Automatic Recognition of Medicinal Plants Using Machine Learning Techniques", International Journal of Advanced Computer Science and Applications, Vol. 3, no. 8, No. 4, 2017.
[10]H.X. Kan, L. Jin, F. L. Zhou ", Classification of medicinal plant leaf images based on multifunctional extraction", Pattern recognition and image analysis, Vol. 1, No. 27, No. 3, 2017, pp. 581-587, 10546618. © Pleiades Publishing, Ltd.
[11] Riddhi H. Shaparia, Dr. Narendra M. Patel und Prof. Zankhana H. Shah, "Classification of Flowers Using Texture and Color Features", International Conference on Research and Innovation in Science, Engineering and Technology, Band 2, 2017, Seiten 113–118.