DEEPHERB: A VISION BASED SYSTEM FOR MEDICINAL PLANTS USING XCEPTION FEATURES

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CONTENTS

1.ABSTRACT

- For Plant identification, here we propose an application that can identify all the features of a plant and it’s ayurvedic medicinal values.
- We also describe all the details of a plant parts and how the medicine should prepare.
- Here we built the application using ANN(Artificial Neural Network) and SVM(Support Vector Machine) algorithm for classification.
- CNN(Convolutional Neural Network) architecture is used for plant identification.
- In our system we also add the features like nearest Ayurvedic hospitals and availability of medicines.

2.INTRODUCTION

- Ayurveda is one of the most renowned traditional systems of medicine that has survived and flourished from ages till date.
- Our main aim is to integrate traditional ayurvedic wisdom with new technology.
- In Ayurveda medicine, correct identification of medicinal plants is of great importance, Incorrect identification of medicinal plants may lead to adverse results.
- This project presents how rare medicinal plants were identified with high accuracy by applying image processing and machine learning capabilities.
- It also provides the information about all parts of plants and it’s specifications.

3.OBJECTIVE

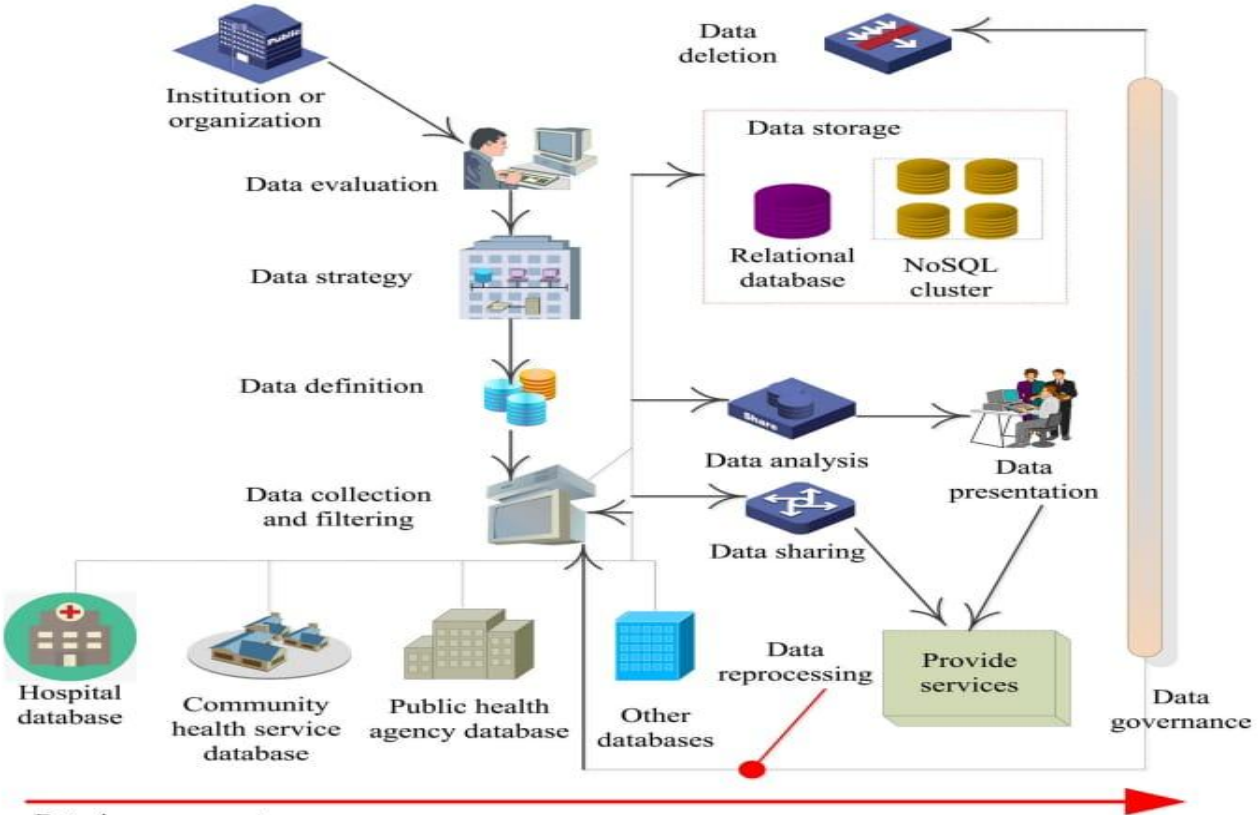
- For the upliftment of Ayurveda.
- For easily identification of medicine for normal diseases.
- To reduce the side effects of allopathic medicine.
- To reduce incorrect identification of plants with medicinal values.

4.LITERATURE SURVEY

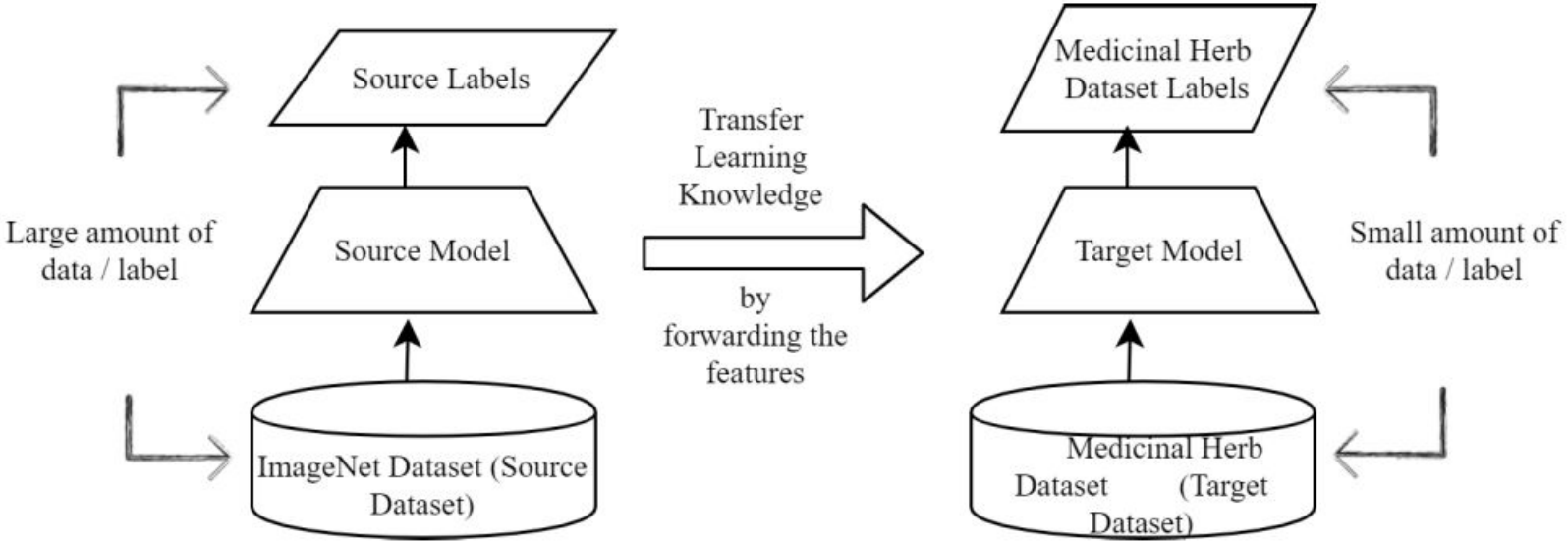
#	Paper and year	Author	Methodology	Advantages	Disadvantages
1.	Plant leaf identification based on machine learning algorithms(2021)	D.M.C.Dissanayake, W.G.C.W.Kumara	Data filtered and enhanced and classified using SVM,RS,NN algorith	High learning rate for MLP	Highly complex as 3 algorithms are used
2.	Identification of medicinal plants by visual characteristics of leaves and flowers()	A.D.A.D.S.Jayalath, P.V.D.Nadeeshan, D.P,Nawinna	A robust technique using CNN for identification of medicinal plants	Medicinal plants are identified with high accuracy	High computational cost
3.	Identification of ayurvedic medicinal plants by image processing of leaf samples(2017)	Manojkumar P, Surya C.M, Varun P, Gopi	Texture features i	It uses simple texture features for classification medicinal plants	Incorrect identification leads to adverse effect

#	Paper and year	Author	Methodology	Advantages	Disadvantages
4.	A novel herbal leaf identification and authentication using deep learning neural network(2020)	Haryono,khairul Anam,Azmi Sallah	Convolution neural network(CNN)	Recognition herbal with high accuracy and fastily	Training and testing is difficult
5.	Comparison and classification of medicinal plant leaf based on the texture feature(2020)	Pushpa B R,Megha N,Amaljith K V	K nearest neighbours classifier(KNN)	Extracted more features of the leaves	Computation time will be slow
6.	Computer vision based feature extraction of leaves for identification of medicinal values of plants(2016)	D.venkataraman, Mangayarkarshi N	Feature extraction	Enhance the image details of medicinal plants	large database is used

5.EXISTING SYSTEM



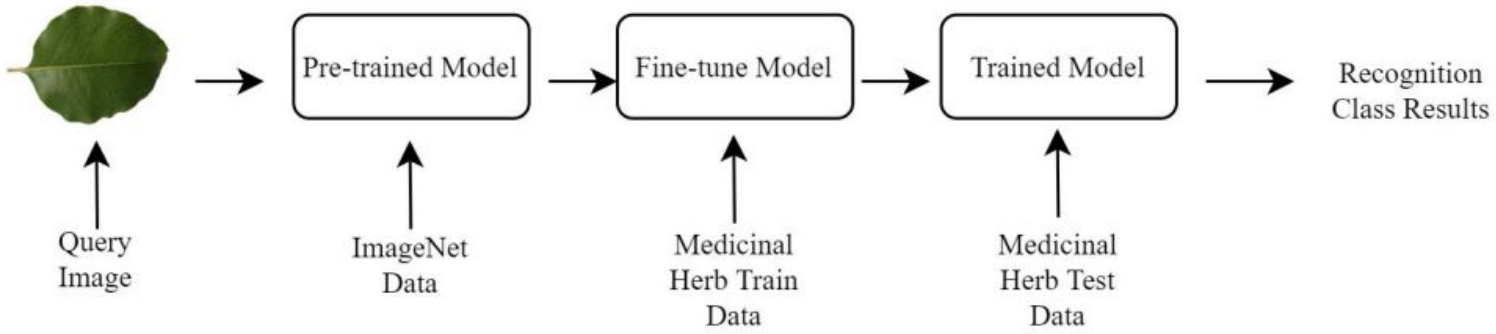
6. PROPOSED SYSTEM



METHODOLOGY

- The digital images of the herb samples are acqiured and they fed to preprocess and segmentation phase
- The features of the leaf are extracted by CNN architecture
- These features are classified using two machine learning techniques such as ANN and SVM
- ImageNet dataset is used to learn from pre trained architectures such as VGG(Visual Geometric Group) and Xception

GENERAL REPRESENTATION OF TRANSFER LEARNING ON FINE-TUNED MODEL



VGG and XCEPTION

- VGG architecture consist of 5 sets of convolution layers.
- ReLu(Rectified Linear Unit) is applied after each convolution layer to reduce spatial dimension.
- Xception model is based on depthwise seperable convolution and residual connections.
- Xception means Extreme inception.
- Inception allows to use multiple filter size in a single image block.
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SVM(Support Vector Machine)

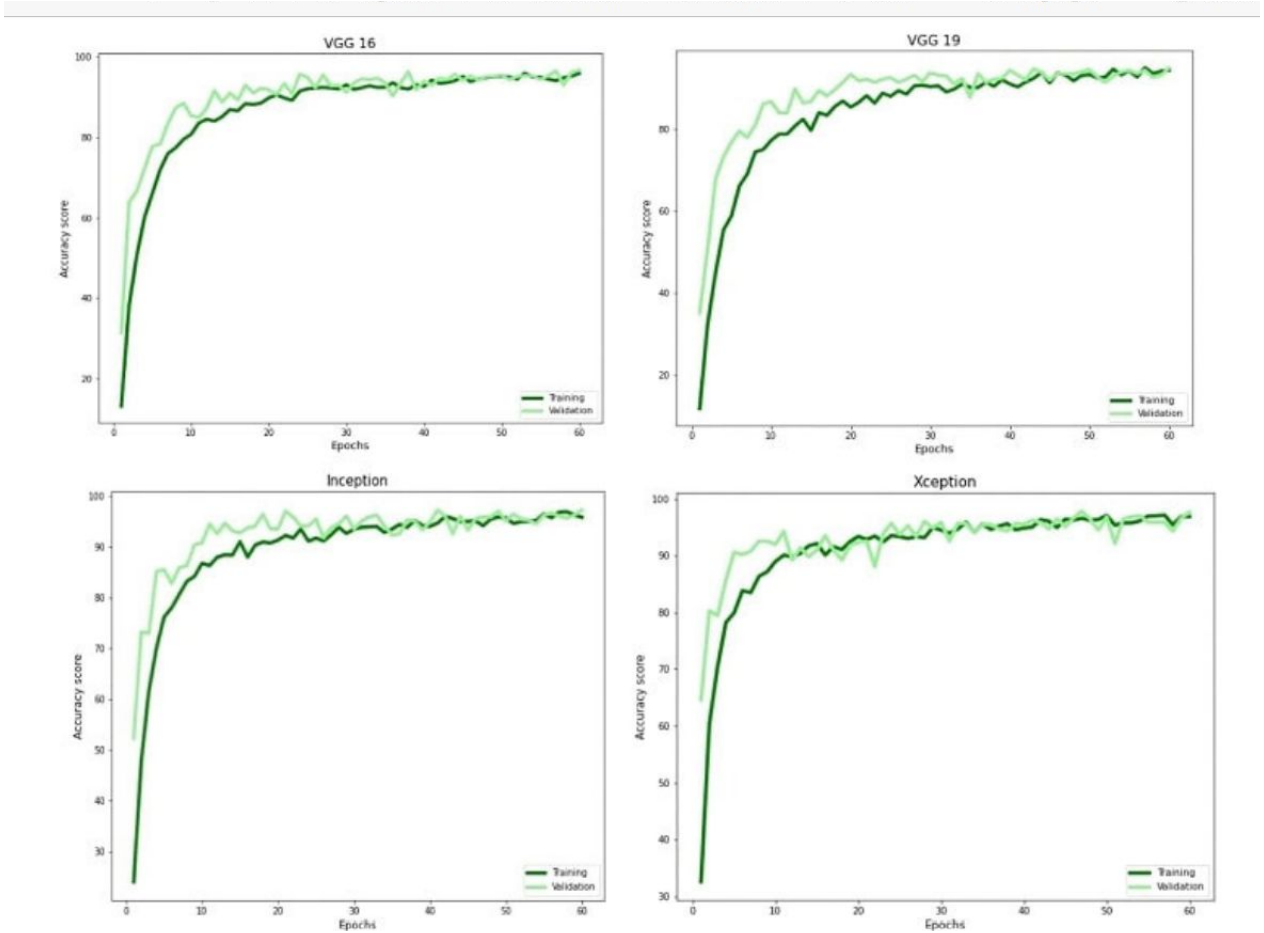
- It works by categorization of data points even when datas are linearly seperable.
- A set of supervised learning methods used for classification ,regression and outliers detection.
- It is effective in high dimensional spaces.

BO(Bayesian Optimization)

- It is used for improving perfomance.
- The BO technique requires very few iterations to reach the optimal predicted per-formance values.

7.RESULT AND DISCUSSION

- The proposed model extracts the features classifies the herbs using an artificial neural network classifier shows an average accuracy of 97.5%.
- The work also proves that transfer learning is an efficient approach to build any neural network model with a limited dataset.
- The findings show that Xception architecture has outper-formed when compared to the other three popular DCNN architectures.



The training and testing accuracy vs epochs of ANN models on the DeepHerb dataset.

8.APPLICATION AND FUTURE SCOPE

- Can be used for professional analysis of ayurvedic medicines.
- It can be helpful for the discovery of new plants.
- Efficiently utilise even minute medicinal values of plants.
- Easy to provide raw materials for cosmetic,drug,pharmaceutical and other industries.

9. CONCLUSION

- Help to gain information about Ayurvedic Medicine
- Help to find out the medicinal plants and their features
- Help to find out which part of plant is useful
- Teach how to use that medicinal plant efficiently
- SVM algorithm is used
- CNN and ANN methods used for identification and matching up the database
- As future work, we can perform image classification with larger datasets. Object recognition from videos also recommended.

10. REFERENCES

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THANK YOU