# Detection of medicinal herbal plants using ML : A Brief Survey

## 1. Abstract

Detection of medicinal herbal plant is study on medicinal plant species along with their medicinal properties. In both rural and urban locations, many people are now unaware of their indigenous medicinal plants and their medicinal advantages. Nowadays identification of medicinal plants, to know their medicinal properties and consumption details are time consuming process and requires help of experts. Hence, there is a need of having application to gain knowledge or to know advantages of different plants.

In today's world new detection systems are being developed. So, in this paper we would like to highlight the usage of CNN (Convolution Neural Network) and VGG16 (pre trianed CNN model). The main challenge in this project is to get data by capturing the images of the plants and to train the system which should correctly identify leaf and provide accurate information as the output. So, the goal of this project is to develop a machine learning-based system that can detect and identify medicinal herbal plants from images. The system should be able to accurately identify the plant species and provide information about its medicinal properties.

2. Introduction

The aim of the project is to develop application which provides information such as botanical name, Indian name and uses of the leaf identified. Detection of medicinal herbal plants concentrates on identifying medicinal herbal plants by extracting features of the plant by using VGG16 model. Medicinal plants have played a crucial role in healthcare and traditional remedies for centuries, and leveraging advanced ML models like VGG16 for their identification offers numerous benefits. The VGG16 model is a powerful and widely recognized convolutional neural network (CNN) architecture that has been extensively used in various computer vision tasks, including the identification and classification of plants.

* Medicinal plants are often rare or endangered, and there are concerns about their extinction due to overharvesting. The system can aid in the conservation efforts by identifying rare and endangered medicinal plant species, which can then be protected.
* The information provided by the system can help pharmaceutical companies.
* The system can help farmers identify the required plants, which can then be used in various agricultural practices.
* The system is also helpful in research and development of new medicines. This technology can be combined with other emerging technologies to improve the accuracy.

3. Related Work

Here various paper talk about the usage of different models used in order to develop a system some of techniques used are transfer learning(paper[1]), machine learning classifiers, two stage authentication process(paper[4]), global average pooling(paper[5]) and deep learning algorithms(paper[7]) etc... .

In the paper by Shailendra, Roopashree & Jude, Anitha the author have used CNN architecture(paper[1]) to extract the features for plant classification. The paper showcases a novel medicinal leaf dataset entitled Deep Herb dataset comprising of 2515 leaf images from 40 varied species of India herbs. The work consists of four phases, data sampling, image pre-processing and segmentation, extraction of features and classification. But the work doesn’t provide the exact result instead provides the top-5 images and hence there is a need for providing most accurate result. Here authors have used advanced techniques such as transfer learning in computer vision and deep learning helps the building of an automatic recognition system for medicinal plants. The authors have got the accuracy rate of 97.5% with the small dataset.

Another method by using Log-Gabor Filters and Deep Learning Algorithms paper[7]

This model develops a computer vision system that uses CNNs and handcrafted filters from Log-Gabor filters to identify medicinal plants based on their leaf textural features in an ensemble manner. The proposed model (OTAMNet), created by fusing a Log-Gabor layer into the transition layers of the DenseNet201 architecture. The work consists of 2450 images, 50 images each from 49 medicinal plant leaves. But the work does not enhance to have more species in medicinal plant database.

## 3. Proposed Methodology

In this paper we explain the way in which identification process and feature extraction is done by using VGG16 pre trained model.

## 4. Limitations

## 5. Results and Discussion

## 6. Conclusion and Future work

## 7.References

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