GEOGRAPHICAL LOCATION AND IDENTIFICATION OF MEDICINALPLANTS

Prabhu.T[1], Vishali.B[2]
[1]Assistant Professor, [2]UG Student,
Department of EEE, K.S.Rangasamy College of Technology, Tiruchengode, Tamilnadu, India

ABSTRACT
In this paper, it mainly focus on the identification the location of medicinal leaves. The medicine image recognition and retrieval have great potential applications. Several previous studies have focused on the recognition with hand–crafted image features, but there are two limitation in them. Therefore, designing high-level image representation for recognition and retrieval in real world medicine images is facing a great challenge. In this proposal, the Convolutional Neural Network (CNN) for herbal medicine image recognition and retrieval is implemented. For the recognition problem, the recognition network is fine-tuned by adding a triplet loss to search for the most similar medicine images. The leaf of medicinal plants is identified by locating the area of the plant growth. The Global Positioning System monitors and detect the variety of leaf. The entire medicinal plants details including its utility in medicinal fields are stored in the Cloud database. For evaluation method, the public database is constructed of herbal medicine categories. The data is accessed by the users through the mobile application according to their production needs.
KEYWORDS: Image Processing, Edge Detection, MATLAB, GPS

I. METHODOLOY

Fig. 1.1: Methodology of Geographical Location and Identification of Medicinal Plants

The image is captured using mobile camera and the image is involved in processing to indicate the accuracy of the medicinal leaf. The Raspberry Pi3 module is interfaced to process the image and compare the database. The entire data of analysis and its uses are stored in the cloud database. The Mobile Application is provided with the factors for accessing the data according to the user needs.

II. BLOCK DIAGRAM

The medicinal leaf is identified by capturing the images using camera module. The image is involved in segmentation and the features of leaf are extracted. The image is processed to identify the infection of disease in the leaf. If any variation in the leaf feature, it is indicated that the leaf is infected.

Fig. 1.2: Block Diagram of Geographical Location and Identification of Medicinal Plants

The Raspberry Pi module interfaced with the camera and the comparison of images is performed. Then the image of leaf, its uses and location are stored in the cloud database. The database is accessed using the naturopathy and the location of leaf is identified geographically and result is displayed in our mobile phone. The output provides the location of medicinal plants, Name, its uses and its side effects of the medicinal plants.

III. EDGE DETECTION USING MATLAB
3.1 Image Processing

Image Processing is the study of any algorithm that takes an image as input and returns an image as output. Image Processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. It is a type of signal dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Usually Image Processing system includes treating images as two dimensional signals while applying already set signal processing methods to them.

3.2 Image Acquisition

In image processing, it is defined as the action of retrieving an image from some source, usually a hardware-based source for processing. It is the first step in the workflow sequence because, without an image, no processing is possible. A digital image is produced by one or several image sensors, besides various types of light-sensitive cameras, include range sensors, tomography devices, and ultra-sonic cameras.

3.3 Preprocessing

The process of enhancing the image, which should be used for further processing, is called preprocessing. This process involves five steps of noise elimination, edge detection, and shape refinement to enhance the image.

3.4 Edge Detection

Edge detection is an image processing technique for finding the boundaries of objects within images. It works by detecting discontinuities in brightness. Edge detection is used for image segmentation and data extraction in areas such as image processing, computer vision, and machine vision.

3.5 Feature Extraction

Feature extraction a type of dimensionality reduction that efficiently represents interesting parts of an image as a compact feature vector. This approach is useful when image sizes are large and a reduced feature representation is required to quickly complete tasks such as image matching and retrieval.

3.6 Classification

Classification of remotely sensed data is used to assign corresponding levels with respect to groups with homogeneous characteristics, with the aim of discriminating multiple objects from each other within the image.

3.8 Recognition

Image recognition is the process of identifying and detecting an object or a feature in a digital image or video. The image features are recognized in the leaf are identified by the feature variation. It refers to distinguish the leaf in an image by specified features.
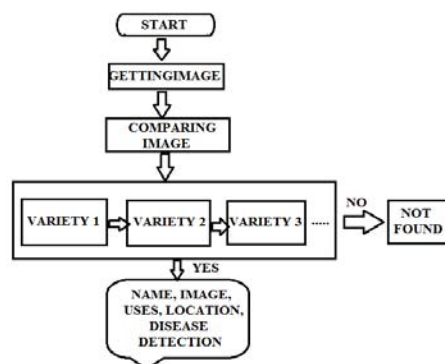
IV. FLOWCHART

Fig.1.3 Flow chart of proposed system

The various varieties of the medicinal leaf are provided and compared with the database, if the leaf matches the features of the leaf the details of the leaf are displayed in mobile application. If it fails to match the features, the iteration continues.

V. SOFTWARE DESCRIPTION
5.1 MATLAB

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solution are expressed in familiar mathematical notation. It is an interactive system whose basic data element is an array that does not require dimensioning. Using MATLAB, to analyze data, develop algorithms and create models and applications. The language, tool, and built-in math functions enable you to explore multiple approaches and reach a solution faster than with spreadsheets or traditional programming languages, such as C/C++ or Java. More than a million engineers and scientists in industry and academic use MATLAB.

5.2 CLOUD DATABASE

A database accessible to clients from the cloud and delivered to users on demand via the internet from a cloud database provider's server. Also referred to as Database-as-a-Service, cloud

databases can use cloud computing to achieve optimized scaling, high availability, multi-tenancy and effective resource allocation. While a cloud database can be a traditional database such as a MySQL or SQL server database that has been adopted for cloud use, a native cloud database such as Xeround's MySQL cloud database tends to better equipped to optimally use cloud resources and to guarantee scalability as well as availability and stability.

Resulting Images of Edge Detection

Here, the resulting images of MATLAB are shown. Initially the natural image of leaf is provided as the input for the system. The image is detected using soble edge detection technique and the features are identified from the image. The classification and segmentation of medicinal plants using edge detection technique. The various features of the medicinal plants were initially extracted and sent for segmentation of the respective images.
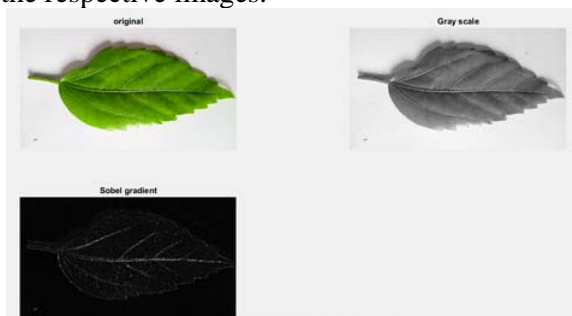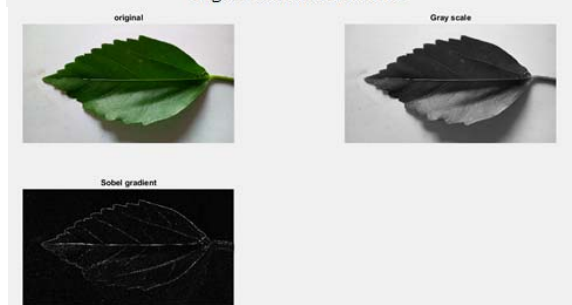

Fig.5.1 Hibiscus Detected
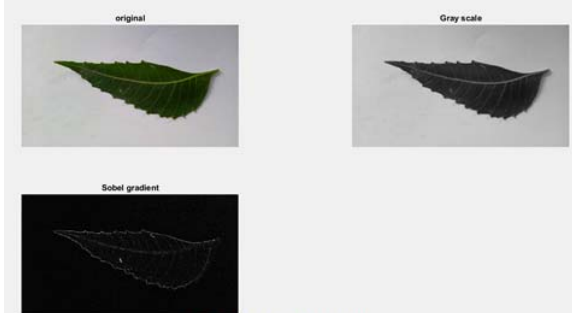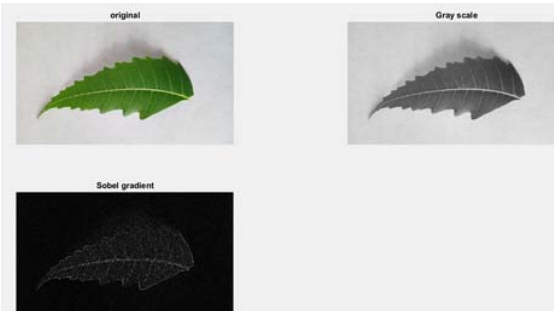

Fig.5.2 Hibiscus Detected

Fig.5.3 Neem Detected
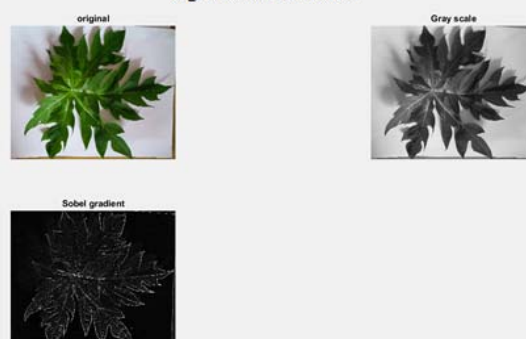

Fig.5.4 Neem Detected
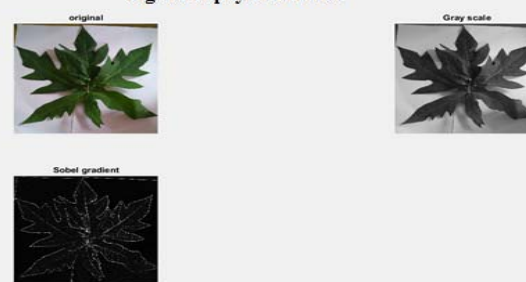

Fig.5.5 Papaya Detected

Fig.5.6 Papaya Detected

VI. BENEFICIARY OF THIS INNOVATION

By a man power the name of the plants are given through the device and the device give the uses and locations. Many plants can be identified easily and employed for direct marketing to the research persons in the medicinal fields and can be used in the Ministry of AYUSH. Medicinal plants help mankind and others in one or the other way. In India, medicinal plants are used in food. But, due to environmental deterioration and lack of awareness, many rare plant species are on verge of extinction. In India, Himalaya is the rich source of medicinal plant species. These species have got medicinal importance. The healthcare company called, Himalaya Drug Company, Bangalore, India, exports Ayurveda medicines since 1930. Hence, the task of medicinal plant identification and classification has become very important in view of involving people in the domestication of these plants.
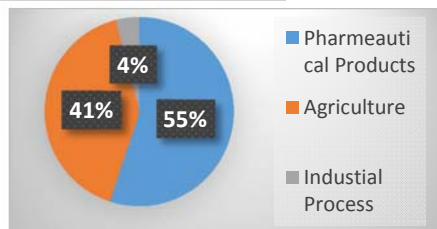
Fig.6.1 Beneficiary Survey of Medicinal Plant

These become the features in their automatic recognition and differ from one plant to the other. But, a machine vision system for recognition of medicinal plants requires capture of these features through either division of new approach for feature extraction or adoption of existing methods in the literature.

VII. CONCLUSION

By using Image Processing, the leaves are captured, compared with images are stored in the cloud and it will give a name, uses in the medicinal plants leaf and geographical location of the medicinal plants. Initially, the image of the plants are captured and analyzed for feature variation and the data are collected about the medicinal plants, Secondly the collected data about the plants and the processed images of the plants are stored in the database. After all this processes the final module of this product are tested and validated.

VIII. FUTURE WORK

The MATLAB is interfaced with Raspberry Pi 3 and the entire data of the leaves are stored in Cloud Database. The input leaves are compared with the cloud database, give the entire details of the medicinal leaf and track Geographical Location of the input leaf. The cloud database is accessed to view the location through Mobile Application.

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