TRACKING LOCATION OF MEDICINAL PLANTS IN DENSE FOREST USING IMAGE PROCESSING

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***Abstract*—This project proposes a methodology for locating medicinal plants in dense forest or places where human cannot go in search for it. Image of the plant to be searched is given as the input to the system and the system after performing certain image processing methods on the image will finally give us the position of that plant by finding the coordinates through the camera we have set. Medicinal plants have a promising future because there are about half million plants around the world, and most of their medical activities have not yet investigated, and their medical activities could be helpful in the treatment of present or future studies. Hence it is Important to be able to locate them in the dense forests.**

***Index Terms*— image processing, coordinates.**

I. INTRODUCTION

[1]Natural medicine has for ages been acknowledged as one of many earliest kinds of solutions employed by people. Many people in establishing countries however count on traditional healing techniques and medicinal plants because of their day-to-day healthcare needs, in spite of the improvement in contemporary medicine [2]

Medicinal plants have played an important role of primary health care system among the people. Most of the people dependents on traditional medicinal practices to cure human and other animal diseases. Since ancient times, in search for rescue for their disease, the people looked for drugs in nature. The use of plant, plant extract or chemical derived from plants to treat disease is therapeutic modalities .It has reported that more than 75 pure compounds derived from higher plants are used in herbal medicine but most of those applied in modern medicine are now produced synthetically. Like every single living individual from the biosphere, medicinal and aromatic plants are not safe to the impacts of environmental change. The destruction and deterioration of organic habitats of medicinal crops have led to declined supply of these valuable natural materials. Forests of Kerala are endowed with a sizable quantity of medicinal plants. An authentic book with this essential element of forest methods is still missing and thus almost no information can be acquired on the medicinal qualities of many species. A list of the medicinal plants of Kerala forests is prepared, The habitat and subject were studied and these information were also noted[3]. The species are arranged in respective plant families. This project helps in finding the medicinal plants which is present in the forest with the help of image processing and thus helps people to reduce their difficulty in finding them.

II. RELATED WORKS

[4]One of the principle inspirations of plant species distinguishing proof is to find new species in ineffectively known natural surroundings and make a database to spare those plants which are at the phase of annihilation. This paper introduces a framework for building the database of nearby vegetation of Uttarakhand district and utilizing leaf pictures for plant species recognizable proof. The framework includes creative picture pre-preparing methods particularly required for the custom database of Uttarakhand Region. The proposed framework can consequently order 32 sorts of plants by means of the leaf pictures gained utilizing flatbed desktop scanner. Twelve elements are figured from five fundamental morphological elements and these extricated twelve-dimensional component vectors are grouped usingIB1 classifier of WEKA. Exploratory outcomes show that our approach is extremely encouraging with a precision of 79.4% on 32 sorts of plants. There are a few confinements, for example, some manual exertion is required for checking physiological length of the leaf picture and the framework should be reached out to bigger number of plants by catching greater dataset to incorporate different plants found in the area.

[5] In this article, a near review between Linear Discriminant Analysis (LDA) and Random Forests (RF) classifiers for the issue of plant order has been introduced. The proposed framework has three fundamental stages; pre-preparing, include extraction and plant order. The proposed grouping methodology was executed by applying foundation evacuation, and removing shading parts for each picture. At that point, include extraction was connected to each pre-handled picture, HSV shading minutes, shape, first request surface, GLCM and vein components are acquired as elements vector. At long last, LDA and RF models are produced for plant characterization. The proposed approach has been actualized by means of applying LDA framework and RF framework usinglO-overlap cross-approval. In light of the acquired the test comes about, LDA accomplished exactness superior to RF. Later on, various future research could be accomplished through ordering distinctive sorts of plants by including different components. In addition, other Machine Learning methodologies could be utilized keeping in mind the end goal to address the focal points and impediments of applying each of them.

III. IMPLEMENTATION

Here we are creating a prototype for the plant location tracking system, thus we are creating an environment consisting of plants and a webcam instead of a satellite. In this system proposed we have to give the name of the plant to be searched as input. First of all, training part contains feature extraction, which is done using SIFT (Scale Invariant Feature Transform) algorithm. After this step we will get some features which will be a vector (single row or single column matrix) called descriptor. There will be a set of descriptors called feature pool and these are saved for further image comparison.

Then comes the testing part where we capture the image of the environment which contains many plants in it, using a webcam instead of satellite then features are extracted from them also. These features are then compared with the features we got from the data set we have created during the training section of our project. This comparison is done using EUCLIDEAN distance method. If the image is found to be matching, then the coordinates of it obtained from the image.

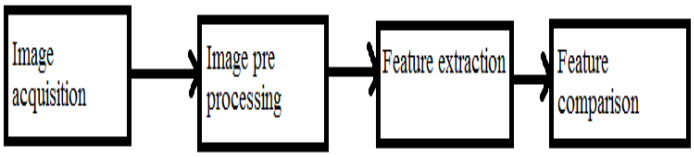

Fig.1. Proposed Methodology

A. Image Preprocessing

Here the image taken is initially converted from rgb to black and white format. Otsu's threshold method is used on this image for further image pre-processing. [6]The algorithm assumes that the image contains two classes of pixels following bi-modal histogram (foreground pixels and background pixels), it then calculates the optimum threshold separating the two classes so that their combined spread (intra-class variance) is minimal, or equivalently (because the sum of pairwise squared distances is constant), so that their inter-class variance is maximal. On the output image we get, we draw bounding box using matlab function. This image is then fed to the next stage of feature extraction.

B. Feature Extraction

Here we use an image processing algorithm called SIFT algorithm by which we can get important features of the image that can be used for comparison. Scale-invariant feature transform (or SIFT) is an algorithm in computer vision to detect and describe local features in images.

C. Feature Comparison

Features of the plant whose name we entered is taken from the database and is compared with the features of each plants in the image that we take in real time. It is done using Euclidean distance method. If they match the location of that plant is shown as coordinates (since it is a prototype, if done using the help of satellite location will be obtained easily). The features that we get from the SIFT algorithm will be a vector, so here mathematical calculations are done for comparing the image features.

IV. FUTURE ENHANCEMENT

If the location tracking of medicinal plant's technology is implemented, a large proportion of the population that relies only on medicinal plants for their treatment of various diseases, will get a highly useful feature, that will allow them to check the location before searching for the same in urgent situations.If this project is made with the help of satellite images, finding the position of the plants will be very easy and using it will be helpful in locating the medicinal plants and also it is beneficial to the Common people and society and it will reduce the economic loss for government for certain extent.

V. CONCLUSION

Medicinal plants have played an important role of primary health care system among the people.Most of the people dependents on traditional medicinal practices to cure human and other animal diseases. Hence here using this project we can track them efficiently and also protect them from extinction

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