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PLANT DISEASE DETECTION SYSTEM USING BLOB DETECTION

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Abstract: *India is agrarian nation where roughly 18% of product yield is lost worldwide because of irritation assault each year which is esteemed around Rs. 90,000 million. Expansive utilization of pesticides damages the soil, has intense harmfulness to people and animals, changes in pest status in agro-biological communities, high cost of control practices, residue problems in environment, and so on. Whiteflies are outstanding destructive creepy insects present on leaves of plant, discharge sticky honeydew, cause yellowing of leaves and harm the harvest yield. The expansion of whiteflies has been generally depended on visual judgment by agriculturists. The visual judgment by ranchers for thickness of whiteflies has been less precise due to the diverse levels of distinguishing identification skills. Additionally, it sets aside long time for identification of Whiteflies present on leaves in research centers. Because of financial significance of crops and strong effects of damage levels, recognition of whiteflies at early stages has turned out to be imperative. In proposed solution, utilizing android application, we are computing influenced zone of plant and in view of influenced region we are figuring seriousness of disease. Additionally we will recommend treatment in Hindi for identified disease.*

Keywords: *Plant Disease Detection, Hue Saturation Value Range, Blob Detection, Image Processing, Android.*

I. INTRODUCTION

Agriculture has turned out to be a great deal more than just a way to nourish continually developing populations. Plants have turned into an essential wellspring of vitality, and are a basic piece in the puzzle to take care of the issue of a dangerous atmospheric deviation. There are a few diseases that influence plants with the possibility to bring about devastating financial, social and biological losses. In this context, diagnosing illnesses in a precise and convenient route is absolutely critical. There are a few approaches to identify plant pathologies [1]. A few diseases don't have any unmistakable indications related, or those seem just when it is past the point where it is possible to act. In those cases, regularly some sort of modern investigation, for the most part by methods for effective magnifying lens, is vital. In different cases, the signs must be distinguished in parts of the electromagnetic range that are not obvious to people. A typical approach for this situation is the utilization of remote detecting strategies that investigate multi and hyper spectral image captures. [5] The strategies that embrace this approach frequently utilize advanced picture processing tools to accomplish their objectives. Nonetheless, because of their numerous peculiarities and to the degree of the writing regarding the matter, they won't be dealt with in this framework. Most illnesses, be that as it may, create some sort of sign in the unmistakable range. In most by far of the cases, the analysis, or if nothing else a first figure about the ailment, is performed outwardly by people. Prepared raters might be proficient in perceiving and measuring maladies; in any case, they have some related inconveniences that may hurt the endeavors in numerous cases [2].

II. MOTIVATION

Agriculturists are the foundation of India. Understanding the importance of the issues related with plant malady. Architecture analysis for sickness recognition of leaf horticultural advancement in India roused this work to build up an easy to use application for the individual related with agribusiness improvement.

III. LITERATURE SURVEY

Vegetable pathologies may show in various parts of the plant. There are strategies investigating visual prompts introduced in those parts, similar to roots, kernels, organic products, stems and leaves. As remarked earlier, this work concentrates in the last two, especially leaves. This segment is partitioned into three subsections as indicated by the fundamental purpose behind the proposed strategies. The subsections, thus, are partitioned by the principle specialized arrangement utilized in the algorithm. A summarizing table containing data about the way of life considered and technical solutions embraced by each work is introduced in the concluding segment.

A few attributes are shared by most strategies displayed in this area: the images are caught utilizing consumer level cameras in a controlled research condition, and the arrangement utilized for the pictures is RGB

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quantized with 8 bits. Along these lines, unless expressed generally, those are the conditions under which the portrayed techniques work. Additionally, for all methods and purposes all strategies referred to in this framework apply some sort of pre-preparing to tidy up the pictures, therefore this data will be removed, unless some warrants are more detailing.

Objectives of Proposed System

The objectives are as follows:

- *To make an efficient use of image processing techniques.*
- *Provide solution with least hardware requirement.*
- *To develop an Android application that is cost efficient, as android phones are widely available at low costs.*
- *Minimize the use of resources as farmers can't afford costly equipment.*
- *Easy to use and accurate so that farmers can adopt the application quickly.*

IV. METHODOLOGY

A) Blob Detection:

In this algorithm, methods are aimed at detecting regions in a digital image that differ in properties, such as brightness or color, compared to surrounding regions. Independently detect corresponding regions in scaled versions of the same image [3].

A blob is a region of an image in which some properties are constant or approximately constant; all the points in a blob can be considered in some sense to be similar to each other.

B) HSV Color model:

HSV stands for hue, saturation, and value.

- *The hue (H) of a color alludes to which unadulterated color it takes after. Shades are portrayed by a number that indicates the position of the comparing pure color on the color wheel [4].*
- *The saturation (S) of a color portrays how white the shading is.*
- *The value (V) of a color, additionally called its lightness, portrays how dark the color would be.*

V. SYSTEM ARCHITECTURE

Figure 1 shows the block diagram of the proposed system.

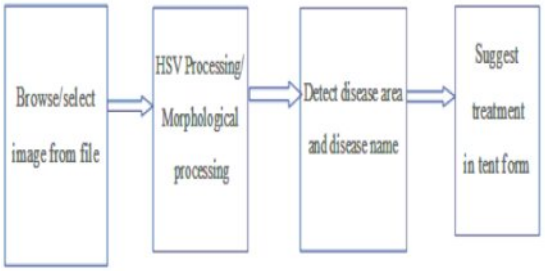

Figure 1: System Architecture

System provides GUI to the user to interact with system.

- *User can select image from files and upload it on application,*
- *User will get disease information on GUI.*
- *User will give language preferences to system.*
- *Will get result in preferable language like English and Hindi.*

Proposed system uses flow which includes:

- *Image is converted to HSV format.*
- *Disease parts of plan leaf will be observed and HSV range will be determined.*
- *Blobs (rectangle) will be drawn around detected disease area.*
- *Plant disease will be determined based on detected disease area and HSV value.*
- *System will able to give output in the form severity like low medium and high.*

VI. CONCLUSION

In this system, Image processing-based approach is proposed for plant diseases detection. This proposed system describes different techniques of image processing for several plant species that have been used for detecting plant diseases. The disease of the plant is known at an early stage and the cure is suggested using different languages (Hindi, Marathi, etc).

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