International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 05 | May-2018 www.irjet.net p-ISSN: 2395-0072

Classification and Detection of Plant Leaf Disease Based On GLCM and SVM Classifier

Chaitra N C[1], Natesh M[2]

[1]*M.Tech student, Dept. Of Computer science & Engineering, Vidyavardhaka College of Engineering, Karnataka, India*
[2]*Associate Professor, Dept. Of Computer science & Engineering, Vidyavardhaka College of Engineering, Karnataka, India*

Abstract - *India is where the fundamental wellspring of wage is from agriculture. Farmers grow an assortment of yields in light of nativity. Since the plants experience the ill effects of the diseases edit creation diminishes because of contaminations caused by a few kinds of illnesses on its leaf, organic product, and stem. The plant leaf infection identification is an imperative factor in farming region. The greater part of the plant maladies are caused by infections, organisms, microscopic organisms and so on... Usually rancher outwardly checks the ailment. Ailments are regularly hard to control. Finding of the sickness ought to be finished with legitimate activities and ought to be done precisely and it must be done at the proper time. Image pre -processing is the drifting procedure in recognition and order of plant leaf malady. This paper depicts how to identify leaf maladies naturally. The given framework will give an exact, unconstrained, quick and extremely conservative strategy in identifying and ordering leaf maladies. This paper is pictured to aid the distinguishing and steps like image acquisition, image pre-preparing, include classification and grouping by classifier. This theme talked about the techniques utilized for the recognition of plant ailments utilizing their leaves pictures.*

Key Words: **Image acquisition, image pre-processing, feature extraction, classification, classifier, etc.**

1. INTRODUCTION

In India the vast majority of the general population are ranchers they rely upon the agribusiness. Horticulture is a field which changes social and financial condition every day. On the off chance that appropriate administration isn't done prompts a misfortune in horticulture items. Ranchers have the mean to expand edit efficiency and quality. They have a choice to choose required yields for their homestead level and after that find fitting pesticides for the plant to diminish the infection and increment the generation. Vegetables and organic products are the most critical horticultural items from a client perspective. The developed plants won't generally be sound once in a while they may end up unfortunate. So as to build the creation with great quality the we have to screen plants oftentimes in light of the fact that the plant sickness prompts a lessening of the item. The prudent benefit relies upon an item quality. The item quality which relies upon the nature of a dirt, seeds, and manures. So to increase the benefit agriculturist for the most part centers around these three fundamental things.

For effective development, one should screen the wellbeing and in addition the infection of the plant. Ailments in plant cause substantial loss of the item. Subsequently the ailment should be recognized at the beginning times, prescribing ranchers to maintain a strategic distance from the mischief in the creation of the product to build the yield. It is important to distinguish and control such infections in a particular period which are at their underlying state. So it is critical to wreck such ailments previously it will impact on some fundamental task of a plant body, for example, photosynthesis, transpiration, fertilization, preparation, germination and so forth.

Plants experience the ill effects of sicknesses like Alternaria interchange (contagious), Anthracnose, Bacterial Blight (microscopic organisms), and Cercospora Leaf Spot. Plant malady will be essentially distinguished by watching diverse examples on the parts of the plant like leaf, organic product, and stem. The signs on the leaf are thought about for distinguishing the disease.

2. LITERATURE SURVEY

Identification of the plant maladies is the way to keeping the misfortunes in the yield and amount of the farming item. The investigations of the plant sicknesses mean the investigations of outwardly recognizable examples seen on the plant. Wellbeing checking and infection discovery on plant is exceptionally basic for maintainable horticulture. It is extremely hard to screen the plant ailments physically. It requires enormous measure of work, expertise in the plant illnesses, and furthermore require the over the top handling time. Henceforth, picture handling is utilized for the location of plant ailments. Sickness location includes the means like picture securing, picture pre-handling, picture division, highlight extraction and grouping. This paper talked about the strategies utilized for the recognition of plant ailments utilizing their leaves pictures. This paper likewise talked about some division and highlight extraction calculation utilized as a part of the plant illness detection[1]. Improvement of a mechanized framework for recognizing and ordering diverse ailments of the polluted plants is a developing exploration zone in exactness horticulture. This paper gives review on edit illness location utilizing picture preparing strategies. Illness in crops causes noteworthy lessening in amount and nature of the agrarian item. Manual

discovery of the maladies is exceptionally troublesome and not exact for rancher. This makes a requirement for Image handling methods which will help in precise and convenient recognition of the infections and conquer the constraints of the human vision. The creation rate can be enhanced by illness recognition in well-time. Yield insurance particularly in substantial ranches is finished by utilizing mechanized picture handling strategy that can distinguish unhealthy leaf utilizing shading data of leaves [2].A framework comprises of four phases; the main stage is the picture upgrade, which incorporates, histogram investigation, HSI improvement and power alteration. Fluffy c-implies calculation is utilized for division of caught picture. Shading, state of spot, estimate is three highlights used to extricate highlights from leaf. At that point characterization depends on back proliferation based neural networks [3].

3. EXISTING SYSTEM

Manual strategy demonstrates the which individual has the information of the plant leaf has been called for investigation for the plant and the leaf malady is recognized by the learning and experience of that individual and afterward the fitting pesticide is proposed by that individual. These all procedure happens physically so the time has come expending and has a great deal of odds of being misinterpretation of right leaf malady distinguishing proof.

4. PROPOSED SYSTEM

The principle objective is to recognize the sickness in plant leaves with a high exactness as contrast with current methods.

- To distinguish an unfortunate area of plant clears out.
- Classification of plant leaf sicknesses utilizing surface highlights.
- Coding is utilized to examine the leaf disease.
- The examined data/result are sent by means of SMS to the rancher.

Following gives depiction of the calculations which we are utilizing as a part of our venture.

Technique: For identification and order of plant sicknesses is utilized a picture handling system. The general idea for any vision related calculation of picture characterization is nearly the same and appeared in figure3. To start with, the advanced pictures are procured from nature utilizing a computerized camera. At that point picture preparing methods are connected to the procured pictures to remove valuable highlights that are essential for assist investigation. After that Support Vector Machine (SVM) strategy is utilized for the characterization according to particular issue. The well ordered strategy is as demonstrated as follows:

- RGB picture procurement
- Convert the information picture into shading space
- Computing the shading highlights
- Configuring the SVM for acknowledgment

The methods as takes after well ordered as takes after:

Picture Acquisition: Image securing is a vital advance. These pictures are gained by utilizing the distinctive advanced system. In this method, a computerized camera is utilized to catch pictures. For the examination of malady on the leaf, better nature of pictures is required and picture database is required.

Picture Pre-handling: After the picture obtaining and making the picture database, the subsequent stage is to picture pre-preparing. For obtaining the first picture in that the information picture pre-handling step is an extremely proficient process. In the pre-handling of picture we stifle undesired bending of these pictures and improve some picture highlights critical for additionally preparing and investigation assignment. In picture pre-handling step it incorporates shading space transformation, picture upgrade, and picture division. The gained picture will have some picture organize. This picture is changed over into the RGB design. The RGB Images of leaves are changed over into shading space portrayal. These RGB pictures of the leaf are changed over into the Hue Saturation Value (HSV) picture design.

- HUE - It is a shading quality that portrays unadulterated shading as apparent by an eyewitness.
- SATURATION - Saturation named as relative immaculateness or the measure of white light added to tint.
- VALUE - Value implies adequacy of light.

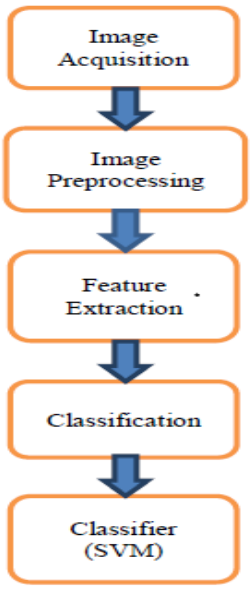

Fig: System Design

After the shading space change process, tone segment is utilized for encourage investigation. Immersion and esteem are dropped since it doesn't give any additional data.

Feature Extraction: Feature extraction is identified with dimensionality lessening. At the point when the info information of a calculation is too vast to ever be handled and it is suspected to be excess then it can be changed into a lessened arrangement of highlights. In the examination of unhealthy pictures, there is have to remove the maladies. This procedure is called highlight extraction. The separated highlights are required to contain the important data from the information, with the goal that the coveted errand can be performed by utilizing this decreased portrayal rather than the entire starting information. This is utilized for highlight extraction which incorporates diverse advances, for example, sifting, standardization, division and question distinguishing proof. Highlight extraction gives an arrangement of noteworthy locales and items. There are three techniques for include extraction which are for the most part utilized. These are as per the following.

- Texture Based Feature Extraction
- Shape Based Feature Extraction
- Color Based Feature Extraction

In that we have utilized just two surfaces they are

- Texture Based Feature Extraction
- Color Based Feature Extraction

Grouping: The methods of arrangement are absolutely subject to a question acknowledgment strategy. There is a little distinction between picture handling and protest acknowledgment, picture preparing manages an alternate strategy which can enhance the visual nature of the information picture, though question acknowledgment manages the portrayal and arrangement of the question. In the hypothetical approach, the example is spoken to in a vector space so the choice calculation (in view of a factual idea) is utilized to choose which class of the example has a place with SVM strategy, it can be comprehensively separated into traditional and neural system approach. The established approach relies upon the insights of the info information to be ordered

Bolster Vector Machine: Support Vector Machine (SVM) is a non-straight Classifier. The machine learning calculation which is utilized as a part of numerous example acknowledgment issues, including surface characterization. In SVM, the info information is non-directly mapped to straightly isolated information in some high dimensional space giving great order execution. SVM augments the negligible separation between various classes. The division of classes is completed with various parts. SVM is intended to work with just two classes by deciding the hyper plane. This is finished by amplifying the edge from the hyper plane of the two classes.

5. RESULTS AND DISCUSSION

Following is the procedure for detection of leaf diseases.

1. Select the leaf on which we have to detect disease.

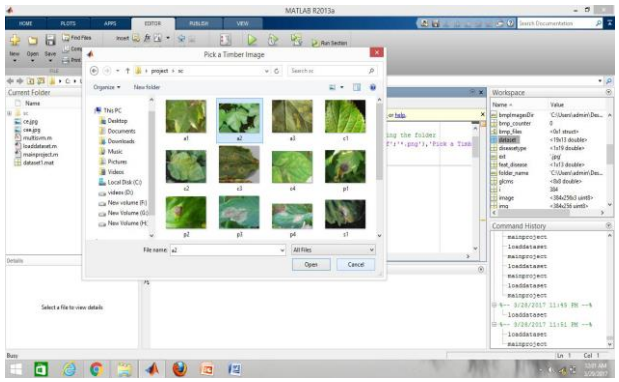

Figure: Select the Leaf

2. Two figures Pop up window will happen on pc. which are one from chose leaf and another from the change of RGB to Gray picture will show up on screen.

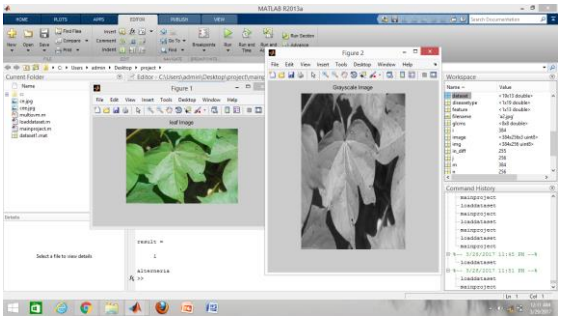

Figure: Result Will Be Displayed

3. Name of the disease and classification plant is display on command window.

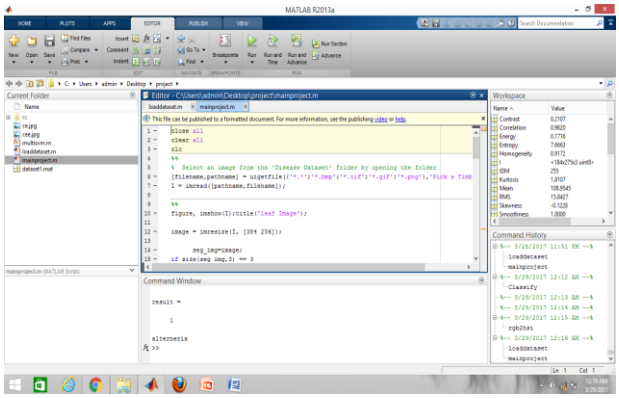

Figure: Detected Leaf Will Be Displayed

6. CONCLUSION

The PC can consequently arrange various types of plants through the leaf pictures stacked from computerized

cameras or scanners. SVM is utilized for recognizing the illness in a speed on preparing and straightforward structure. Contrasted and different strategies, contrast with other technique this calculation is quick in execution, proficient in acknowledgment and simple in usage and easy to get it. The proposed leaf investigation calculation is tried on every single perceived leave. The proposed test comes about demonstrate that the approach is important, which can essentially bolster an exact.

7. FUTURE SCOPE

Future work worries with examine work in a specific field with cutting edge highlights and innovation and by making an ANDROID application then the ranchers can without much of a stretch get it.

8. APPLICATIONS

The applications will range from different fields. Some of them are as follows.

- Agriculture
- Nursery
- Bio-technology labs
- Gardening
- Forest Department

REFERENCES

[1] Anand.H.Kulkarni, AshwinPatil R. K., "Applying image processing technique to detect plant disease", International Journal of Modern Engineering Research (IJMER) Vol.2, Issue.5, Sep Oct. 2012 pp-3661-3664 ISSN: 2249-6645

[2] Sachin D. Khirade, A. B. Patil "Plant Disease Detection Using Image Processing", 2015 International Conference on Computing Communication Control and Automation..

[3] Prakash M. Mainkar1, Shreekant Ghorpade2, MayurAdawadkar, "Plant Leaf Disease Detection and Classification Using Image Processing Techniques", International Journal of Innovative and Emerging Research in Engineering Volume 2, Issue 4, 2015 International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4, Issue 6, June 2014

[4] Savita N. Ghaiwat, 2 ParulArora, "Detection and Classification of Plant Leaf Diseases Using Image processing Techniques", International Journal of Recent Advances in Engineering & Technology (IJRAET), ISSN (Online): 2347 - 2812, Volume-2, Issue - 3, 2014. Manreet Kaur, monika Bharati, "Securing user data on cloud using Fog Computing and Decoy technique", Volume 2,Issue 10, October 2014

[5] Malvika Ranjan1, Manasi Rajiv Weginwar, NehaJoshi, Prof.A.B. Ingole,"Detection and classification of leaf disease using artificial neural network", International Journal of Technical Research and Applications e-ISSN: 2320-8163, Volume 3, Issue 3 (May-15)

[6] S. S. Sannakki, V. S. Rajpurohit, V. B. Nargund, and P. Kulkarni, "Diagnosis and Classification of Grape Leaf Diseases using Neural Networks", IEEE 4th ICCCNT, 2013.

[7] Suman T. and Dhruvakumar T., "Classification of paddy leaf diseases using shape and color features", IJEEE, Volume 07, Issue 01, PP.239250, Jan- June 2015.