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A Survey of Image Processing and Identification Techniques

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Abstract : *Image processing is always an interesting field as it gives enhanced visual data for human simplification and processing of image data for transmission and illustration for machine preception. Digital images are processed to give better solution using image processing. Techniques such as Gray scale conversion, Image segmentation, Edge detection, Feature Extraction, Classification are used in image processing.*

In this paper studies of different image processing techniques and its methods has been conducted. Image segmentation is the initial step in many image processing functions like Pattern recognition and image analysis which convert an image into binary form and divide it into different regions. The technique used for segmentation is Otsu's method, K-means Clustering etc. For feature extraction feature vector in visual image is texture, shape and color. Edge detector with morphological operator enhances the clarity of image and noise free images. This paper also gives information about algorithm like Artificial Neural Network and Support Vector Mechanism used for image classification. The image is categorized into the receptive class by an ANN and SVM is used to compile all the categorized result. Overall the paper gives detail knowledge about the techniques used for image processing and identification.

Keywords *– Extraction, Segmentation, Otsu's method, K-means, Edge detection, ANN, SVM, Active Shape model(ASM), GLCM, SIFT, Genetic algorithm, BIM, RGB Colour, BIM, Vein algorithm.*

1. INTRODUCTION

Image processing is a technique to translate an image into digital form and execute some operation on it, in order to get an improved image or to retrieve useful data from image. It is a procedure of signal distribution. The process takes input as an image and then apply efficient algorithms, and the results may be image, data or features associated with that image [15]. The processing stages start with image segmentation. There is some desire from image segmentation algorithms. first of them is speed. While processing for segmentations of an image, it does not want to spend much time. The second is good shape integration of the object. This will enhance results in picture acknowledgment. If the result of shape is incomplete, it need to take many properties to record the edge of the over-section results [2].

In computer vision, picture division is the way toward parceling an advanced picture into various sections. The objective of division is to disentangle or potentially change the portrayal of a picture into something that is more important and less demanding to examine. Picture division is regularly used to find articles and limits in pictures. All the more absolutely, picture division is the way toward allotting a mark to each pixel in a picture to such an extent that pixels with a similar name share certain attributes [1].

Division is generally the essential stage in any undertaking to analyze or interpret an image consequently [3]. Division conquers any hindrance between low-level picture preparing and abnormal state picture handling. A few sorts of division procedure will be found in any application including the discovery, acknowledgment, and estimation of items in pictures.

Otsu's division strategy, in light of histogram examination, is extensively applied as a part of different applications [2]. The approach sections a picture by enhancing the change amongst fragments and, all the while, limits the difference inside the portions. Proposes an Otsu-strategy adjustment for dividing hand compositions from an uproarious foundation. In, the Otsu-technique is utilized to extract different focuses in the data pictures, proposes to extend Otsu 1D-histogrambased technique into a "2D-Otsu" for division. The first single-edge Otsu strategy expressions for one ideal limit for dividing the information image into "forefront" and "foundation".

Proposes to apply this unique Otsu technique for acquiring a first layer of content versus foundation; at that point, a re-thresholding is focused on the foundation pixels to get additional layer of frontal area content [2]. The frequent layers of content are linked to create the last content division. A comparative recursive methodology was at that point proposed in. The recursive division thought is likewise utilized as a part of, again for dim scale pictures as it were.

Dependent upon the sort of data that is the matrix, the photos are separated into pictures of power scale and recorded (each fragment being a novel number, a scalar) and vector pictures (each portion being a vector, vector number which in this manner parts into a couple of areas) [3]. Scalar picture constrain is where each pixel regard (real or normal numbers) is seen as a measure of sparkling force. Scalar recorded picture is a photo in which the estimation of a pixel is where information can be connected with the shade of the pixel being mentioned to.

Edge recognition is a procedure of finding an edge of a picture. Recognition of edges in a picture is a critical advance towards comprehension picture highlights. Edges comprise of significant highlights and contain remarkable data. It essentially reduces the picture size and channels out data that might be viewed as less important, in this manner preserving the imperative auxiliary properties of a picture [5]. Most pictures contain some measure of redundancies that can here and there be displaced when edges are recognized and succeeded amid remaking. This is the place edge discovery becomes an integral factor. to automate these photo-interpretation tasks. It particularly reiterates on the purpose of the most suitable input data to manage with these two arrangement problems [6]. Two kinds of optical images have been used: Rapid Eye data and 50cm ground resolution aerialortho-images.

2. IMAGE PROCESSING TECHNIQUES

Image processing by digital means has many branches including image recognition, image segmentation, image compression, etc. It is likewise the fundamental square in numerous applications like pattern recognition, object identification etc. Image processing normally states digital picture processing, yet process like optical and analog are additionally being possible. This survey is all about general techniques that applied to them. The recovery of pictures (delivering the input info in any case) is referred to as imaging. Image-processing techniques isolate the discrete color planes of an image and then apply standard signal-processing approaches to them. Images are also regards as three-dimensional signals. There are few papers which describe about image processing techniques.

2.1 A Study and Comparison of Different Image Segmentation Algorithms [2]

Image segmentation is a procedure, which split a picture, which are comparative in some viewpoint and change over it into paired frame for preparing. Segmentation process is the primary step in many image processing. Procedure incorporates object characteristic and portrayal and detail estimation. Higher request errand takes after the grouping of object. Hence, classification, imagining of region of interest in any image, description plays a substantial role in image segmentation.

There are numerous segmentation algorithms available in the literature, which split an image into number of regions based on some picture attributes like pixel quality esteem, shading, color, shape etc. These all calculations are described based on the segmentation strategy utilized. Segmentation method split the region using different method such as single or multiple thresh holding, segmentation on parallel region, segmentation using clustering, edge detection, and also segmentation on fuzzy logic technique etc. The chosen methodology are Otsu's calculation, K-means, quad tree, Delta E, Region developing and fth calculations. To check the execution of the calculation, they applied 6 straightforward and complex pictures accessible in the literature. The obtained result demonstrates the viability of the division. The paper provides the best approach for segmentations.

Advantages:
It can segment the image by simply finding edges in the image.
Higher order task follows the classification of object.
Disadvantage:
The methods are difficult to identify multiple objects.

2.2 Generalization of Otsu's Binarization into Recursive Color Image Segmentation [7]

Otsu's segmentation method, based on thresholding and histogram study. The method segments an image by maximizing the variance between segments and, simultaneously, minimizes the variance within the segments. proposes an Otsu-method adaptation for segmenting hand writings from a noisy background. In the

Otsu-technique is utilized to remove various focuses in the input pictures. proposes to extend Otsu 1D-histogrambased method into a "2D-Otsu" for segmentation.

The original single-threshold Otsu method searches for one optimum threshold for segmenting the input image into "foreground" and "background". proposes to apply this original Otsu method for obtaining a first layer of text versus background; then, a re-thresholding is conducted on the background pixels to obtain another layer of foreground text. The multiple layers of text are combined to generate the final text segmentation results. A similar recursive strategy was already proposed in Image segmentation can detect regions of objects, defined by the artist when painting at different shades or colors. These segments can reveal the contrast of shadows in paintings or some conceptual base patterns in the paintings. The recursive division thought is additionally utilized as a part of, again for gray scale pictures only. The paper proposes a recursive thresholding algorithm for Colour images, which can also be generalized to any multichannel image.

Advantages:

The method segments an image by maximizing the variance between segments and, simultaneously, minimizes the variance within the segments.

Otsu-strategy is utilized to remove numerous objectives in the inputs.

Disadvantages:

Since working of the histogram, a resulting segmented image has in general more than just n + 1 segments.

2.3 Image classification using Support Vector Machine (SVM) and Artificial Neural Network (ANN) [12]

The paper contains two area artificial neural network and support vector mechanism useful for image classification. The image is categorized into the receptive class by an ANN and SVM is used to compile all the categorized result.

Once image processing, image segmentation and feature extraction the output is frequently a vector or multi- vector. They are huge portrayal space and sub space. For each sub-space a picture would be removed the component vector. This feature vector is the input for the ANN. Artificial neural network contains three levels for processing- input, hidden and output. The number of nodes of input layer is equal to element of feature vector. The total nodes of output layer are equivalent to the number of classes in ANN.

To find the ideal weight SVM is used. The support vector mechanism essential to be trained first, the parameter of SVM is adjusted to appropriate for the training data to the specific problem. The support vector mechanism combines all artificial neutral networks classified. The paper proposes detail classification process which required less time to implement and process.

Advantages:

The support vector mechanism combines all artificial neutral networks classified result and gives solution by recognizing the weight if ANN result.

Disadvantages:

The training time of ANN_SVM is problem is large database.

2.4 A Review on Content Based Retrieval Using Feature Extraction [11]

Content Based image retrieval (CSIR) is permanent technique for discovery various images from large dataset. CBIR uses the image visual content for color, shape and texture to index and represent image. The paper gives detailed of CBIR with feature extraction and performance parameter. It gives various feature extraction method of texture, color and shape which are commonly used. For feature extraction feature in visual image is are texture, shape and color etc.

The visual feature is common feature and domain feature. For color feature extraction Color slot, color requirement and similarity measurements are used for extraction. Color sets and color data moments are also used as histogram of color. For texture include significant knowledge about structure surface arrangement. Texture gives valuable surface data about their relationship and structure with surrounding. Shape dose not refer to the image shape but to the distinct region shape that is being sought out. Features of shape are separated into two different classes region based and boundary based. Boundary based uses only shape boundary whereas shape feature if region based use complete shape region. Shape is characterized through means of perceptually graphed symmetrical cubes vertices of edge, joints outlines and multilateral area removed from an image. The paper illustrates the accuracy percent for each feature vector and combination of color, shape extraction techniques.

Advantages:

Combination of color, texture and shape extraction give high accuracy.
Disadvantages:
Other conceptual methodology for CBIR is not explained.

2.5 Automatic identification of two growth stages for rapeseed plant: Three leaf and Four Leaf Stage [4]

As a fundamental innovation of farming advancement on the planet, computerized horticulture is the coalition of agribusiness and modem data innovation together with counterfeit consciousness innovation. As a standout amongst the most critical parts of advanced farming, edit development observing requires for non-ruinous ongoing access to exact data on plant development in order to give direction to refined administration of harvest and essentially enhance the level of motorization and product yields. As a critical oil edit the development and yield of, rapeseed plants are mostly impacted by the development space, water, compost and in addition different impacts in that it is important to fill the holes, thin and prepare on time.

The technique used is this paper is Active shape model. The ASM is divided into three steps. The front stage is point distribution model is which the entire plant blades are marked point to point. Feature stage is the gray texture models were the leaf of plant is aligned to get geometry of the plant in grey shade. The number to leaf is aligned to get proper shape of plant that identifies the leaf and the number of leaf of that plant. The last process is match the destination search process in which the extracted feature is compared with the exciting dataset in the system to identify the stage. The paper provides a method to identify the number of leaf's in a plant. It can be used in images having multiple object to mark and extract features.
Advantages:
The system precisely anticipates the development phase of rapeseed plant.
Disadvantages:
As a standout amongst the most critical parts of advanced farming, edit development observing requires for non-ruinous ongoing access to exact data on plant development in order to give direction to refined administration of harvest and essentially enhance the level of motorization and product yields.

2.6 A Smart Phone Image Processing Application for Plant Disease Diagnosis [1]

Albeit proficient agribusiness engineers are in charge of the acknowledgment of plant illnesses, savvy frameworks can be utilized for their conclusion in beginning periods. The master frameworks that have been proposed in the writing for this reason for existing, are regularly in light of certainties depicted by the client or picture handling of plant photographs in unmistakable, infrared, light and so on. The acknowledgment of an infection can regularly be founded on side effects like sores or spots in different parts of a plant.

The manifestations of a pathogen can be regularly communicated as contagious or bacterial leaf spots. Vein banding, mosaic and ring spot can likewise show up. The leaves can be twisted or a fine mold can show up. Spore structures may likewise be available. The plants can be also be injured by air pollution or by soil/air chemicals. Each cell of BGW1 can have three distinct grey level values for normal leaf (grey), spot (black) or background (white). The matrix BGW1 is swept to group neighboring pixels belonging to the same spot. The resulting matrix BGW2 has an integer number in each one of its cells. This number is the identity of the spot that it belongs to. If a position in BGW2 is 0, then the corresponding pixel does not belong to a spot.
Advantages:
A Windows Phone application is depicted here equipped for perceiving vineyard infections through photographs of the leaves with exactness higher than 90%.
Disadvantages:
The progression of the symptoms in time can vary significantly depending on the biotic agents and they can be classified as primary or secondary.

2.7 An Effective Algorithm for Edges and Veins Detection in Leaf Images [3]

By examining the sudden change in the intensity values in leaf images the leaf edge can be easily detected. Extraction of edges was performed using edge detection methods like Prewitt, Sobel, Canny, etc. In

this paper, an effective vein detection method is proposed. Initially image preprocessing is performed on the input image followed by edge detection, vein and edge detection, extraction of veins leaf image with edges alone and leaf image with veins alone are produced as output.

The edge and vein algorithm process is as follows. First it Convert the color image (RGB) into grayscale image and then compute local gradient horizontal threshold value *ht* and vertical threshold value *vt* , using Sobel method as discussed in Canny Edge detection method. If (*ht* > *vt*) set *t* to *ht* ; otherwise set *t* to *vt* . The value of *t* is used as approximate threshold value in detecting the leaf edges (excluding veins, weaker edges). Feather leaf edges are detected using Canny Edge Detection method by fixing up threshold values for strong edges. The values of *T*1 and *T* 2 are *t* +0.001 and *t* +0.75 respectively. In this step, only edges of leaf are detected (excluding veins, weaker edges). Edges along with Veins are detected using Canny Edge Detection method by fixing up threshold values for stronger edge and weaker edges. The values of *T*1 and *T* 2 are 0.001 and 0.002 respectively. Finally, the veins alone are extracted from subtracting results of above process and steps value. The paper shows the step by step process for edge and vein detection. The edge detection it done using Canny method which detect sharp edge and adaptive in nature.

Advantages:

The edge with veins detection provide outcome with less sensitive to noise and senses sharper edges.

Disadvantages:

Detecting edge of multiple object in image is difficult.

2.8 Detection of unhealthy region of plant leaves using Image Processing and Genetic Algorithm [5].

This paper exhibits a calculation for picture division method utilized for programmed identification and in addition order of plant leaf sicknesses and overview on various infections arrangement methods that can be utilized for plant leaf infection identification. Picture division, which is a critical angle for sickness recognition in plant leaf malady, is finished by utilizing hereditary calculation. Plant disease identification by pictorial way is more difficult task and at the same period less accurate and can be done only in partial areas. Whereas if automatic detection technique is used it will take less efforts, less time and more accurately.

They used process based on several structures and various section found in the image. This might be color data, edge or segment of an image. Genetic algorithms belong to the transformative algorithms which produce solutions for optimization problems. Algorithm initiates with a set of resolutions called population. Results from one population are selected and then used to arrange a new population. This is done with the anticipation, that the new population will be enhanced than the old one. Solutions which are selected to form new solutions (offspring) are chosen according to their fitness - the more appropriate they are the more probability they have to reproduce. It uses genetic algorithm along with some segmentation based on color clustering method.

Advantages:

Exhibits a calculation for picture division method utilized for programmed identification and in addition orders of plant leaf sicknesses and overview on various infections arrangement methods that can be utilized for plant leaf infection identification.

Genetic algorithms provide solutions for optimization problems.

Disadvantages:

These normally correspond to something that can affect to separate and view as individual objects.

2.9 Contribution of texture and red-edge band for vegetated area detection and identification [6]

This paper challenges to mechanize these photo-interpretation tasks. It mainly accentuates on the purpose of the most appropriate input data to manage with these two classification problems. Two sorts of optical pictures have been utilized: Rapid Eye information and 50cm ground determination elevated ortho-pictures. They first identify the vegetation using rapid eye. Rapid Eye ortho-images were also available they have a 5m ground-resolution and offer red, green, blue, near infrared and an additional red-edge band. Detection of woody areas: In order to select the best image features, classifications using associations of 2 to 4 indices derived both from Rapid Eye and BD Ortho ortho-images have been performed and evaluated. Results have then been sorted according to their global classification accuracy.

Texture data is basic to achieve a decent location. Therefore, at this step, a very high-resolution image from BD Ortho is the most useful image data source. The most important information for discriminating between "deciduous" and "evergreen" plantings was the radiometric information from Rapid Eye. The utility of the red-edge channel for this assignment is built up, since spirit files including this band were involved in all the best relations of red-edge channel to perceive the area.

Advantages:

It particularly emphasizes on the determination of the most suitable input data to cope with these two classification problems.

Disadvantages:

The system can use more sophisticated method for feature selection methods.

2.10 A Graph-Based Approach for Contextual Image Segmentation [17]

Image Segmentation is a standout amongst the hugest errands as it grants identifying the related areas of the pictures and disregard inconsequential data. Any mistake during this phase may cause serious problems to the subsequent methods of the image-based systems. The segmentation process is usually very complex since most of the images present some kind of noise.

In this work, two techniques have been combined to deal with such problem: one derived from the graph theory and other from the anisotropic filtering methods, both featuring the utilization of related data keeping in mind the end goal to classify every pixel in the picture with higher precision.

The effects demonstrate that the arranged approach clobbers the conventional and all around referenced Otsu's technique. In general, noise is originated from physical limitations of the capture sensors. However, some misrepresentations in the image data can also be generated, deliberately or not, due to the management process.

Image segmentation techniques based on graphs cuts are examples of region-based methods. Unlike techniques focused on isolated pixels, i.e., in which the algorithms classify such elements analyzing them alone, the methods which use graph cuts also take into account, as mentioned, contextual information, i.e., the neighborhood of the pixels in the images, to classify them. The graph based approach gives a result for noise content images.

Advantages:

The method gives an especial emphasis to the neighbourhood information to correctly classify a given image pixel under analysis, preserving, with more accuracy, homogeneous and contiguous regions in the images, avoiding the presence of spurious isolated pixels.

Disadvantages:

The performance of the proposed method will be compared with the results of other important approaches, such as the recently proposed median-based versions of the Otsu's method.

The proposed technique will be assessed on other image databases.

2.11 Plant Diseases Detection Using Image Processing Techniques [8]

Agriculture is a most essential and antiquated occupation in India. As economy of India depends on farming creation, most extreme care of nourishment generation is fundamental. Vermin like infection, organism and microorganisms makes contamination plants with misfortune in quality and amount creation. There is vast measure of misfortune of rancher underway. Consequently, legitimate care of plants is essential for same.

This paper introduces a review of utilizing picture preparing techniques to distinguish different plant sicknesses. Picture preparing gives more proficient approaches to distinguish sicknesses caused by parasite, microorganisms or infection on plants. Negligible perceptions by eyes to identify illnesses are not precise. Overdose of pesticides causes hurtful constant illnesses on individuals as not washed appropriately. Overabundance utilizes likewise harms plants supplement quality. It brings about colossal loss of creation to rancher. Subsequently utilization of picture handling strategies to identify and group illnesses in rural applications is useful. The application uses normal method like segmentation with clustering, color extraction and classification to identify plant disease.

Advantages:

Picture preparing gives more proficient approaches to distinguish sicknesses caused by parasite, microorganisms or infection on plants.
Subsequently utilization of picture handling strategies to identify and group illnesses in rural applications is useful.
Disadvantages:
Negligible perceptions by eyes to identify illnesses are not precise.

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2.12 Scaffolding Progress Monitoring of LNG Plant Maintenance Project using BIM and Image Processing Technologies [9]

Platform errands are the most critical work items in Liquefied Nature Gas (LNG) plant support ventures and a compelling advancement checking methodology can be gainful to partners through the better control to the financial plan and calendar of the whole venture. This exploration is concentrated on examining discoveries and lesson learnt from the platform advance observing contextual analysis of a LNG plant support extend. A novel approach by utilizing Building Data Modeling (BIM) and picture preparing advancements to consequently gauge framework advance through site photographs is being creating.

The contextual investigation by embracing the creating approach at a genuine LNG plant is as of now went ahead. The accumulated structure photos have been used to iteratively upgrade the making approach. The input from industry accomplices can be compressed into five points of view: (1) the many-sided quality of platform structure influences the execution of the proposed acknowledgment calculation a great deal; (2) the proposed approach is considered dependable if the normal precision of the advance estimation can be marginally higher than that of the traditional way; (3) a rule for information gathering process is fundamental; (4) decrease site work and move the work stack back to the workplace is favored and; (5) the proposed approach benefits usage temporary workers the most. Building Information Modeling (BIM) assumes a critical part in taking care of the facility related data through the whole life cycle of an facility. Scaffolding monitoring approach aims to improve the progress tracking of scaffolding by automatic calculations of scaffolding quantity through still images and the combination of BIM abilities for assist choice makings.
Advantages:
The current scaffolding progress and productivity monitoring in LNG plants can be done by visual observations through site supervisors. The accuracy of the progress estimation depends on the judgements of supervisors and their experience.
The photos can be efficiently collected and analyzed. Combining with Building Information Modelling (BIM) platform, the results have potential to be relatively accurate than the conventional site observations given that the cost information is embedded in BIM model and automatic process can be potentially achieved.
Disadvantages:
Due to the complexity of the plant facility, the scaffolding design and the layout of the scaffolding installation can be irregular shaped. They influence the performance of the scaffolding recognition algorithm a lot. In addition, the captured photos at site only gather the outer layer information of scaffolding.
The implementation contractors as well as the plant operator all indicated that as long as the accuracy of the proposed recognition processes can be averagely and slightly higher than the conventional manual rough estimations, the proposed approach is considered reliable.

3. ANALYSIS TABLE

The following table gives the analysis of techniques and methods used in research papers on image processing and identification.

Sr. No	Paper Title	Techniques	Addressed Issue
1	A Smart Phone Image Processing Application for Plant Disease Diagnosis [1]	Plant disease recognition technique; Matrix bgw2 is constructed	Image processing that analyses the color features of the spots in plant parts.

2	Scaffolding Progress Monitoring of LNG Plant Maintenance Project using BIM and Image Processing Technologies [9]	BIM model	This method, combining object recognition techniques, can rapidly estimate the total number of scaffolding components from images.
3	Detection of unhealthy region of plant leaves using Image Processing and Genetic Algorithm [5]	Image acquisition; Pre-processing of input image; Segment the components using genetic algorithm.	The optimum output were obtained with less computation efforts. The framework demonstrates the effectiveness of proposed calculation in acknowledgment and order of the leaf infections.
4	Plant Diseases Detection Using Image Processing Techniques [8]	Agrobot; K-means; HSV; ANN; BPNN; CCM; Neural Network; SURF; RBF; SIFT; RDI; GLCM; PCA; SGDM	To increase production in agricultural sector it is necessary to detect diseases on plants and take accurate measures.
5	Color Image Segmentation using Morphological edge Detector Algorithm [14]	ISKMO Algorithm Combination of K-means and edge detection operator	The process shows proper segmentation process and segmentation for noise content image. The combination of algorithm has reduced the detection of false edge in segmentation result.
6	Image classification using support vector mechanism and artificial neural network [12]	ANN algorithm SVM algorithm	ANN classify the result based one by one image feature vector. SVM integrate all result of ANN.
7	GPU based parallel processing for plant growth analysis []	Graphic processing unit(GPU) Thresholding algorithm	Give best thresholding algorithm to get partition of object and environment. The parallelism processing gives more efficient time in execution result.
8	A study on image segmentation using different type of k-means clustering [13]	k-mean clustering method	The paper gives different method or formula to find k-mean value to get better results.
9	Content based image retrieval using feature extraction [11]	Feature extraction using color, shape, texture	Extraction of data from image using its color and texture
10	Automated identification of two growth stage for rapeseed plant: Three leaf and four leaf stage [4]	Active shape method -point distribution -local grey texture method	Used pattern recognition method to get data and process for entire geometry of plant
11	A Study and Comparison of Different Image Segmentation Algorithms [2]	Otsu's algorithm, K-means, quad tree, Delta E, Region growing and fth algorithms.	Image segmentation process, and algorithm for the method based on thresholding, parallel processing clustering, edge detection, histogram analysis.
12	An Effective Algorithm for Edges and Veins Detection in Leaf Images [3]	RGB Color, Edge detection, Vein Detection Algorithm	By examining the sudden change in the intensity values in leaf images the leaf edge can be easily detected.
13	Contribution Of Texture And Red-Edge Band For Vegetated Areas Detection And Identification [6]	Edge Detection	Automate these photo-interpretation tasks. It especially accentuates on the assurance of the most appropriate information to adapt to these two order issues

14	Generalization of Otsu's Binarization into Recursive Colour Image Segmentation [7]	Otsu's Algorithm	Otsu's segmentation method, in view of histogram examination, is broadly utilized as a part of different applications. The method segments an image by maximizing the variance between segments and, simultaneously, minimizes the variance within the segments.

4. CONCLUSION

This paper presents a study on different sorts of image processing strategies. An overview of all related image processing methods such as Gray scale, segmentation, feature extraction and classification techniques have been presented in this paper. Image segmentation using Otsu's method and thresholding gives well-referenced segmentation approach, even in noise content images. These segments can reveal the contrast of shadows in paintings or some conceptual base patterns in the paintings. Feature extraction on image dataset such as leaf, fruit, object gets best data extraction using SIFT method and image sets like flower, plant uses HSV color, shape extraction method to get best result. Morphological operator is used to get clarity and noise free image for processing.

Image classification is a technique to classify images from data. The paper studies ANN and SVM as classifier for image processing technique. It also shows edge detection techniques. The canny edge detector gives better outcome related to others with some optimistic points. The recognition is less sensitive to noise, adaptive in nature and recognizes sharper edges when contrasted with others. Overall the papers give knowledge of best methods used for image processing techniques.

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