ISSN: 2393-828

IJICSE
Open Access

Contents lists available at www.ijicse.in

International Journal of Innovative Computer Science & Engineering

Volume 2 Issue 2; Page No.01-04

A Survey of Image Segmentation of Color Flower Yield Prediction Precision

Rupinder Kaur[1], Barkha Malkaniya[2], Ms. Shrusti[3]

[1]Student, CSE Department, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

er.rupinderkaur.cse@gmail.com

[2]Student, CSE Department, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

barkha.malkaniya@gmail.com

[3]Assistant Professor, CSE Department, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

Shrusti72@gmail.com

ARTICLE INFO

Received: 05 March 2015
Accepted 08 April 2015

Corresponding Author:

Rupinder Kaur

Department of Computer Science and Engineering,
Jayoti Vidyapeeth Women's University, Jaipur

Email:
er.rupinderkaur.cse@gmail.com

ABSTRACT

Segmentation is a process in which precision of object is recognized. Many images are solved by the segmentation only. In field of agriculture, precision become the root of finding accurate yield and to establish the resultant product in agricultural production. Flowers are extracted from the image segmentation technique using Threshold. In this survey, The Flower yield is estimated while accuracy and timely information improvement is done by using prediction precision to increase in the field. The precision prediction is done by color feature as color is the basic fundamental physical property of flower. The various technique and computer vision are presented for flower yield prediction. This paper summarized the main feature and drawback.

INTRODUCTION

In India, flower cultivation has been practiced since the primeval period of time but whereas floriculture has been practice into marketing only in the recent years. The increasing computational ability of segmentation and method in agriculture aspect given improvement in production. Improvement and concern over quality control makes market attract toward the technology and thus more resource in information and technology identifies an important feature in the development.

Computer technology is widely used in agriculture for disease detection [1][2], grading [3] and lesion estimation[4] flower processing[], crop cultivation and yield estimation[6][7][8]. The flower recognition concern of domain specific knowledge is based on image segmentation.

Image segmentation is a process of separation any object from background through its physical features, where as color is considered as a fundamental physical property [9][10] of flower to recognition. Features of object also include shape, size. According to the features, system detects and counts the number of flower in an image.

II.Precision Agriculture and Yield Mapping

Minimization of time, work input, effort and improvement in quality of flower boost the yield profit are the basic goal of business management and marketing. Precision Agriculture provides the best suited result through low input cost in farming and increase the quality, efficiency in the production. Information provides the basic consideration as heart of precision agriculture [11][12]. The lack of tools and equipment in the smaller agricultural land found a major obstacle for the successful implementation of precision agriculture.

Yield mapping is used to measure the amount of crop cultivation in field of land and accumulate the record of harvesting system. It identifies the variability in the agricultural field. Spatial variability drives precision agriculture because soil parameter with little or no spatial dependences will not be conducive to site-specific management and will be managed on the average (pierce and Nowark, 1999) [13].

Variability is field of agriculture is made due to natural calamities or by human. Natural variability occur due to seasonal change, high rainfall over several year and

human variability is due to improper irrigation, drainage, low quality of fertilizer and pesticides

III. Methodology and Review of Image Segmentation of Flower Yield Prediction Precision

The prime objective of this methodology is to find out the number of flower in the polyhouse image by making help of recognition technique with automated information and technology. The automated harvesting using computer technology has been successfully tested for Rose Flower [14].

An yield prediction system contain the most significant element for the precision farming which focus on quality improvement and carry profit for accurate yield mapping. Thus, precision farming improves the yield of next seasonal crop cultivation of flower would increase and with minimum effort and maximum profit gain help the farmer for management.

Image segmentation is a process of separating object from an image from its background using basic features. The color feature is mostly used in image retrieval [1]. Using HSV color space and histogram analysis, flower color definition is done. By default, color of an image is defined in RGB and HSV, closer to human conceptual color understanding [16]. HSV is a model that makes use of three terms – HUE, SATURATION and VALUE. Hue refers to the purity of color without any tint or shade. Saturation signifies the intensity of a color that contain amount of gray in the color and Value refers the brightness or lightness which describes how the dark a color is. HSV is an non-linear transformation of RGB color space.

Separation of flower from field image is done by using image segmentation using threshold technique where HSV color space is consider to be a major role in object extraction. Pixel class of flower is used to determine H-component i.e. (Histogram). Segmentation of flower is done by L*a*b color space where two device are introduced by commission International del'Eclairage (CIE), for color segmentation. The advantage of using L*a*b space in image segmentation is that the color which are similar are differentiate each other in an image. Therefore, this lead to efficient reorganization of image and offers a best potential to automatically identifies, count number of flower in an image using color feature and carry optimal yield estimation for business management.

However, there are many challenges for using this is that it developing automated counting, noise, occluded and clumped object. Thus, to overcome this hazard an pre-processing algorithm are applied on an image. The pre-processing is performed by using A Gaussian Low pass Filter to reduce noise as much as possible. This is the efficient method used to minimize the overtaking hazard in image segmentation.

To study the art of study that are related in the field of work and problems are outlined as-

i. Madirakshi Das, R.Manmatha and Edwared M. Riseman[17] has adopted a approach to indexing a flower patent image domain knowledge where specialized database is used for color utilizing and spatial domain knowledge available through database. This uses the automatic iterative segmentation algorithm for isolate was 66% and processing of recall-precision of flower database is relatively high.

ii. HONG An-xiang, CHEN Gang, LI Jun-li, CHI Zhe-ru, ZHANG Dan [] has performed the flower image retrieval method based on ROT (Region-Of-Interest) feature where efficient segmentation method used based on color clustering and domain knowledge to extract flower region from flower image. The centroid-Contour Distance (CCD) and Angle Code Histogram(ACH) has been used which was characterized from color histogram of flower. The color and shape feature contain 80% accuracy where as color feature separately have 67% and shape carry 6% by ROI approach.

iii. Ulzii-Orshikh Dorj, Malrey Lee and Sangsub Han [18] has implemented the counting algorithm for tangerine yield estimation to carry out better output with partially/semi-partially occluded tangerine. The resultant of yield estimation through tangerine flower is about 20%. The estimation of tangerine is not proper of result to poor and low usability of automation harvesting but the processing time is comparatively high.

iv. TZU-Hsiang Hsu, Chang-Hsing Lee, Ling-Hwei Chen [19] has presented An Interactive flower image recognition system which provide an iterative interface that use boundary tracing algorithm to find out the flower boundary tracing method to extract the flower region. The color and shape feature of pistil/stamen area will also be used to represent the characteristic of flower more precisely. The recognition rate of flower image is about 99.7%by using color and shape feature of flower region and pistil/stamen area.

v. Jie Zou and George Nagy [20] has worked on the evaluation of model based on Interactive flower recognition which was based on the concept of Computer Assisted Visual Interactive Recognition (CAVIAR). It worked on the parameterized geometrical model that at serves as human-computer communication channel for implementing flower recognition system. Its average accuracy is about 2% and CAVIR laid to person need of little practice has

become more faster than unaided connoisseurs.

vi. Chomptip Pornpanomchai, Chawin Kuakiatngam, Pitchayuk supapattranon and Nititat Siriwisesokul [21] has accomplished the leaf and flower recognition system by using Euclidean distance algorithm. The precision of the system is 76.8% and for recognition leaf and flower image is 74%. The difficulty arrived at the time of taking clear picture without trimming off a leaf or a flower or controlling the environment. The limitation of this research is that the system can recognize just a very small number of plants as compare with a large number of plants in the world.

vii. Tanvi Kulkarni and Nilesh J.Uke [22] has implemented the image segmentation using grabcut method for implementation of image based on flower classification system for extraction of feature which use SHIFT descriptor algorithm for shape detection, HSV model for color and MR8filter bank for texture extraction. The overall performance accuracy is about 8.98% with all combinational feature of image.

viii. Anelia Angelova, Shenghuo Zhu and Yuanqing Lin [23] has worked on image segmentation for large-scale subcategory flower recognition using a segmentation algorithm for flower species recognition. This research is based on identification potential object region for detecting region, thus uses Laplacian–based segmentation which makes more robust to variability and object appearance. The performance efficiency of this method is 80.66% by using different oxford flower species.

ix. Rajesh S.Sarkate, Dr. Kalyankar N.V and Dr. Kanale P.B [24] uses an application of computer vision and color image segmentation for yield prediction precision which uses the automating for precision yield prediction process of gerbera flower using threshold for color segmentation to extract flower from the scene using HSV color space and histogram analysis. The overall accuracy of system is 86.8% for counting the flower in polyhouse. The result gets contaminated when overlapping of flower is done.

x. Takesh saitoh, Kimiya Aoki and Toyohisa Kaneko [2] has efficacious on Automatic recognition of blooming flower based on photographic with digital camera in natural scene. This research is based on flower region extraction method on the boundary by minimizing a sum of local cost dividing by route length. The boundary extraction process successfully completed by 97% and 90% of flower recognition.

IV. TERMINOLOGY USED:

A. SEGMENTATION :

Segmentation means to divide anything into parts, or segments, which can easily accessible, actionable, definable and profitable to have a growth potential for efficient time, cost and effort.

B. PRECISION:

The state or quality for which an amount can be measure for its exactness. Thus, in farming this concept is used for h observing, measuring and finiteness to inter and intra-field variability in crops. The amount in which its exact accuracy is measured is known to be as a Precision.

C. HSV:

HSV is an color model defined as **H**ue, **S**aturation, and **V**alue.

Hue relates to the angle around the central vertical axis corresponds to hue in the Color Basics section. The advantage of using hue is that the angular relationship between tones around the Color circle is easily identified. Hue represents a color model with an angle between 0 degrees to 360 degrees.

Angle	Color
0-60	Red
60-120	Yellow
120-180	Green
180-240	Cyan
240-300	Blue
300-360	Magenta

Figure 1: Hue Color Model Table

Saturation is the range of grey (0% to 100%) in color space where '0,' represent the grey color and '1,' primary color.

Value is the brightness of the color which varies with color saturation that describes the intensity of the color from 0% to 100%. When value is '0' then is color is Exact Black and its brightness increases as value move up-word direction in color space.

V. CONCLUSION

Image segmentation has become the major part for the image recognition and flower detection from the prediction yield of precision of flower. After color segmentation, circle fitting algorithm applied to separate the flower from the background scene, then counting of flower is done. The flower recognition algorithm used to extract various color and shape feature of flower. In this paper, we provide a quick overview of state- of-art work for providing solution to

various works done in counting flower. The Yield mapping algorithm is used for flower counting. Further various new segmentation techniques are adopted for flower recognition. Thus, this method is aimed to serve an introductory method for those who are interested in this area of research.

REFERENCES

1. Shen Weizheng et al, 2008, Grading Method of Leaf Spot Disease Based on Image Processing, 2008 International Conference on Computer Science and Software Engineering.
2. Anthonys' G, N et al, 2009, An Image Recognition System for Crop Disease Identification of Paddy fields in Sri Lanka, Fourth International Conference on Industrial and Information Systems, ICIIS 2009, 28 - 3I December2009, Sri Lanka.
3. D. E. Guyer, "Apple Grading Using Fuzzy Logic," vol. 27, pp. 37–382, 2003.
4. R. Sarkate and P. Khanale, "Lesion Sternness Estimation in Crop using Color Image Segmentation," pp. 1–4, 2013.
5. A.X. Hong, G. Chen, J.-L. Li, Z.-R. Chi, and D. Zhang, "A flower image retrieval method based on ROI feature.," J. Zhejiang Univ. Sci., vol. , no. 7, pp. 764–72, Jul. 2004.
6. F. Cointault, Texture or color analysis in agronomic images for wheat ear counting, Third International IEEE Conference on Signal-Image Technologies and Internet-Based System.
7. Reveshty, Crop Area Estimation (Olive tree) Using Satellite Images A Case Study in Tarom Region-Zanjan Province Iran.
8. M. Soltani and M. Omid, "A New Mathematical Modelling of Banana Fruit and Comparison with Actual Values of Dimensional Properties," vol. 4, no. 8, pp. 104–113, 2010.
9. Chitade et. Al, Colour Based Image Segmentation Using K-Means Clustering.
10. Ing-Sheen Hsieh, Kuo-Chin Fan , "Color image retrieval using shape and spatial properties," Pattern Recognition, 2000. Proceedings. 1th International Conference on, vol.1, no., pp.1023-1026 vol.1, 2000
11. sioye Olalekan Adekunle," Precision Agriculture: Applicability and Opportunities for Nigerian Agriculture". Middle-East Journal of Scientific Research 13 (9): 1230-1237, 2013
ISSN 1990-9233.
12. N.R.Kitchen, C.J. Snyder, D.W. Franzen, W.J. Wiebold, "Eduacation Needs Of Precision Agriculture" , Precision Agriculture, 3, 342-32, 2002 Kluwer Academic Publishers.
13. Francisca L*ópez* -Granados , Montserrat Jurado-Exp*ó*sito, Silvia Atenciano, Alfonso *García* -Ferrer, Manuel Sánchez de la Orden & Luis *García*, "Spatial variability of agricultural soil parameters in southern Spain", Torres, Plant and Soil 246: 97–10, 2002.
14. Armin Kohan et al, 2011, Robotic Harvesting of Rosa Damascena using Stereoscopic Machine Vision, World Applied Sciences Journal 12 (2): 231-237, 2011, ISSN 1818-492.
15. Hong An-Xiang et al., A flower image retrieval method based on ROI feature, Journal of Zhejiang University SCIENCE, ISSN 1009-309.
16. Baykan et al, Case study in effects of color spaces for mineral identification, Scientific Research and Essays Vol. (11), pp. 1243-123, 4 June, 2010.
17. Das M.; Manmatha R.; Riseman E.M.; "Indexing flower patent images using Domain knowledge," IEEE Intell Syst 14:24_33, 1999.
18. Ulzii-Orshikh Dorj, Malrey Lee, and Sangsub Han, "A Comparative Study on Tangerine Detection, Counting and Yield Estimation Algorithm", International Journal of Security and Its Applications Vol. 7, No. 3, May, 2013, pp. 40-412.
19. Tzu-Hsiang Hsu & Chang-Hsing Lee & Ling-Hwei Chen," An interactive flower image recognition system" Published online: 6 March 2010 Springer Science Business Media, LLC 2010.
20. Jie Zou; Nagy, G., "Evaluation of model-based interactive flower recognition," Pattern Recognition, 2004. ICPR 2004. Proceedings of the 17th International Conference on, vol.2, no., pp. 311- 314 Vol.2, 23-26 Aug.2004.
21. Chomtip Pornpanomchai et al, "Leaf and Flower Recognition System (e-Botanist)", International Journal of Engineering and Technology, Vol.3, No.4, August 2011.
22. Tanvi Kulkarni , Nilesh. J. Uke, "Implementation of Image based Flower Classification System", ISSN: 1694-2108 | Vol. 13, No. 1. MAY 2014.
23. A. Angelova, S. Zhu, and Y. Lin, "Image segmentation for large-scale subcategory flower recognition", ;in Proc. WACV, 2013, pp.39-4.
24. Sarkate, R. S. , Kalyankar, N. V. and Khanale P. B. 2013. Application of computer vision and color image segmentation for yield prediction precision. IEEE International Conference on Information Systems and Computer Networks (ISCON). 9-13.
25. Saitoh, T., Aoki, K., Kaneko, T., "Automatic recognition of blooming flowers," Pattern Recognition, 2004. ICPR 2004.