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Detecting the Quality of Rice

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Abstract: In rice production industry as per the market demand, the detecting the rice quality is very important in the present time and is a very big challenge. The quality control plays a very important role in food industry. Grain quality evaluation may be done manually but it is relatively time consuming, might be varying in results and also costly. To overcome the above limitations, shortcoming image processing techniques is the alternative solution that can be used for grain quality evaluation. Grading and evaluation of the rice grains on the basis of length-breadth ratio and shape. Specifically, Canny algorithm is used for edge detection of each grain. The above technique includes finding the end points of each grain and finding the length and breadth of the grain using a caliper. Following method requires minimum time and it is low in cost. Mainly this paper focuses on the detecting the quality of rice.

Index Terms- Grain quality, rice characteristics, grain evaluation**.**

I. INTRODUCTION

For Rice grain plays a huge role in satisfying the hunger of humans. Usually the quality of the food product is defined by its physical and chemical characteristics. Shape dial micrometer, graphical method and grain shape tester are the methods for the measurement of grain size. But all these methods are time consuming, rate of error is high and costly. The objective of the proposed method is to provide an alternative solution for detecting the quality of rice which reduces the required time, rate of error and cost. Section II - talks about particular problem for the detecting the quality of rice seeds on the basis of size. Section III - talks about the method proposed for calculating parameters like and length-breadth ratio.
Section IV - discusses the evaluation for the quality of rice grains and analysis. It also includes results based on quality analysis of length-breadth ratio.
Section V – the proposed method is concluded is this section.

II. PROBLEM DEFINITION

Quality analysis of product plays a very important role in an agricultural industry. An experienced technician analyzes the Quality of grain seed visually, But the outcome of such measurement is not accurate, varying in results and time consuming. So, to overcome the problems occurred due to traditional methods new and advanced technique.

A. Rice quality and classification

The traditional methods such as grain size and shape measurement are dial micrometer, grain shape tester and graphical method are effective but these methods are time consuming ones. In case of dial micrometer and grain shape tester the length and breadth of single grain can be measured at a time. The outcome of this analysis is also similar to the manual ones i.e. time consuming, having variable results and costly. So, an advanced method is proposed which is an image processing technique [1].

The work focuses on the detecting the quality based on the measurement of length-breadth. Basmati rice is used for quality analysis. The image processing technique is used to get the count of number of rice grains and classification is based on the length-breadth ratio. The length-breadth ratio is the ratio average length and length-breadth of rice grain i.e.

L/B = [(Avg. length of rice) / (Avg. breadth of rice)] *100

III. METHODS

The flow of method which consists of some basic steps is shown in fig. 1. Rice seeds randomly placed on black background. Image is acquired and stored for further analysis. In first pre-processing step image is captured and noise is removed from the image by using filter. Second step involves segmenting the touching grains using Threshold algorithm. In third step we perform edge detection to find out the region of boundaries using Canny algorithm. forth step involves rice seed measurement and in the same step length-breadth ratio is also measured. In the fifth step i.e. the last step the algorithm rice is classified according to its size and shape.

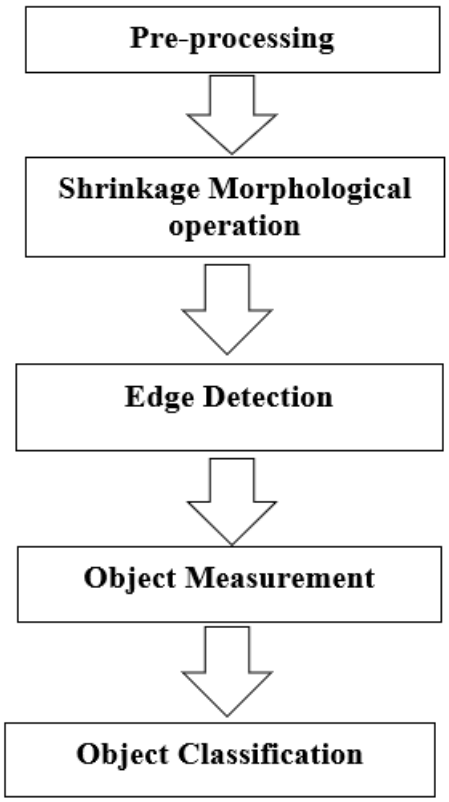

fig. 1 flow diagram for image processing algorithm

A. Image pre-processing

The image is captured using camera which is saved in the device as shown in fig 2. The image is converted into greyscale image shown in fig 3. Filter applied is to the image captured to remove the noise in the image. Filter also sharpens image.

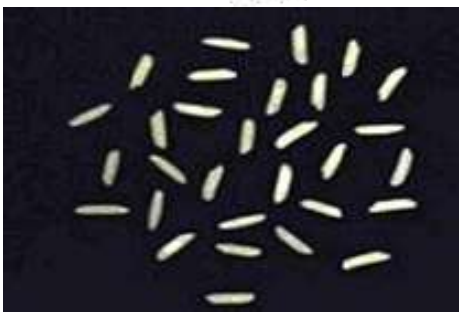

fig. 2 color Image

B. Edge detection

The boundaries of rice grains can be found out with the help of Canny algorithm which is used for edge detection as shown in fig3

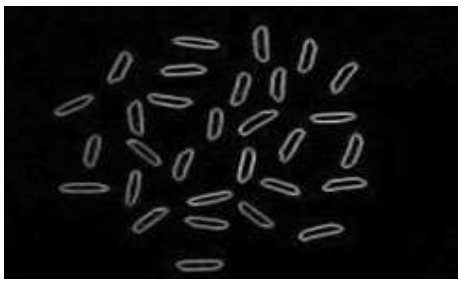

fig.3 edge detection operation on rice grains

C. Object measurement

Measurement indicates the count of number of rice grains which is shown in fig. 5. Canny algorithms applied on the image and outcome of the applied algorithm is we get endpoint values of each grain. We measure the value of length and breadth of each grain. By considering the value of length and breadth we can calculate length-breadth ratio.

D. Object classification

Table 1 gives us the classification parameters of rice grains on the basis of length-breadth ratio.

table1

Grain size	L/B ratio
Slender	Over 3
Medium	2.1 – 3
Round	1.1 – 2
Bold	1 or less

IV. RESULT AND DISCUSSION

The results are recorded by implementing are shown in table 2. The results indicate length-breadth ratio of each grain.

table 2

Sr. no.	Number of grains	L/B ratio	Sr. no.	Number of grains	L/B ratio
1	Grain 0	3.04	6	Grain 5	3.16
2	Grain 1	3.52	7	Grain 6	3.05
3	Grain 2	3.24	8	Grain 7	3.36
4	Grain 3	2.95	9	Grain 8	3.27
5	Grain 4	3.26	10	Grain 9	3.04

V. CONCLUSION

This paper presents the usage of image processing techniques used in automation of quality analysis of in an agricultural context. From the results, it can be said that the proposed method is efficient method to analyze rice grains quality by its length-breadth ratio. The benefits of proposed method are it requires minimum time; cost is less.

VI.FUTUREWORK

For detecting the quality of rice, maximum numbers of parameters are to be measured by image processing techniques. The method specified can be enhanced to design a system which can be used to enhance the quality of rice.

VII.REFERENCES

[1] Jagdeep Singh Aulakh, Dr. V.K. Banga, "Grading of rice grains by image processing", IIJERT, Vol. 1 Issue 4, June 2012.

[2] Bhupinder Verma, "Image Processing Techniques for Grading & Classification of Rice", International Conference on Computer and Communication Technology (ICCCT), pp. 220-223, 2012.

[3] G.Ajay, M.Suneel, K.Kiran Kumar, P.Siva Prasad, "Quality Evaluation of Rice Grains Using Morphological Methods", International Journal of Soft Computing and Engineering (IJSCE), pp. 35-37, Vol. 2, Issue 6, January 2013.

[4] Harpreet Kaur, Baljit Singh, "Classification & Grading Rice using Multi-Class SVM", International Journal of Scientific and Research Publications (IJSRP), Vol. 3, Issue 4, April 2013.

[5] Guang-rong, Liu, Rice color inspection based on image processing technique." In Advances in Energy Engineering (ICAEE), 2010 International Conference on IEEE, pp. 134-137, 2010.

[6] S.Durai, M.Thanjai Vadivel, T.Sujithra, Grading of Rice Quality by Chalky area analysis Using Simple Digital Image Processing Techniques, International Journal of Pure and Applied Mathematics, 114(12):657-665, 2017.