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Real Time Assaying and Grading Solution for eNAM

Dipali Mohite¹, Sheetal Shendage¹, Tanvi Shewale¹, Sayli Pawar¹, Mrs. Mannat Doultani²

B.E, Dept. of Computer Engineering, VES Institute of Technology, Mumbai, India¹

Asst. Professor, Dept. of Computer Engineering, VES Institute of Technology, Mumbai, India²

ABSTRACT: With the increase in number of users using the services and also the data being shared over the internet has varied tremendously. Hence, the need of internet has become very essential in everyone's life. Nowadays, everything is done online. Every customer mostly looking for products online, also sellers of products are using online platforms for the same. In INDIA, agriculture sector is in need of urgent infusion of the latest technology that will help farming commodity to make selling decisions advantageously and make our agriculture sector shine. so this study aims to provide farmers a platform where they can use these technologies with ease and no cost. and can get fair price for their agriculture products. Which can help farmers, distributors, and customers to buy and sell the agriculture products without the interference of the middle mans.

KEYWORDS: Agriculture Sector, Distributor, Customer, Middle Man

I. INTRODUCTION

With the expansion of e-commerce and the increase in technologies used over the internet, we aim to create a national agriculture market to overcome the financial problems of the farmers. since the use of internet is growing tremendously but still our farmer friends are unaware of such technologies and completely clueless about the best deals for him. Electronic National Agriculture Market (eNAM) is a virtual markets with addition to physical market as a backend, which networks the existing physical markets or mandis to create a national market for agriculture products for electronic trading in india. eNAM is build to help our farming commodities to get the fair price for their farming products and to eliminate the middle persons. this technology also allows you to maintain higher control over the business like what you produce, where and how to sell the products to increase the business. eNAM will reduce the risks which are faced while selling the products through wholesale like low commodities markets and help farmers to make farming decisions advantageously.

II. RELATED WORK

A) Machine Vision Based Fruit Classification And Grading

AUTHOR : Sapan Naik, Bankim Patel

ABSTRACT : This Paper reviews a detailed overview of the process of fruit grading detail examination of of each step is done.

INFERENCE : Checking the quality of the fruits by machine learning algorithms like K-nearest neighbour (KNN), Support Vector Machine (SVM), Artificial Neural Network (ANN) and Convolution Neural Network (CNN) are used.

B) Non-destructive quality analysis of indian rice using machine learning technique

AUTHOR: Vinita shah , Kavindra Jain , Chetna V. Maheshwari

ABSTRACT: The proposed method for quality assessment of rice grains using image processing and multi-layer feed forward neural network technique which achieves high degree of quality than human vision inspection. The proposed

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algorithm based on morphological features is developed for counting the number of Krishna Kamod rice seeds with long seeds as well as small seeds. A trained multi-layer feed forward neural network based classifier is developed for identification of unknown rice seed quality.

INFERENCE : This paper presents a quality analysis of Krishna Kamod rice seeds by image analysis and soft computing technique. This paper illustrates new method which is non destructive for quality analysis of Rice seeds.

C) Determination of the varieties of rice kernels based on vision deep learning technology.

AUTHOR: Ping Lin, Yongming Chen, Jianqiang He, Xiaorong Fu

ABSTRACT: In this paper they have proposed a model of a convolutional neural network for automatic extraction of several features of the rice kernels from a gray image. The system developed convolutional neural network which is consisted of 7 layers and receives a gray image that measures 200×200 pixels as its input. Therefore, there are 40000 neurons on the network at the input level.

INFERENCE : In this paper, they have presented a convolutional neural network for rice kernel classification using scanned images. They have achieved 99.52% accuracy on the rice kernel dataset and it also indicates future work is valuable to pursue.

III. EXISTING SYSTEM

Existing system is a e-trading portal which connect the existing APMC mandis to create a national market for agricultural commodities. It promotes the real time price discovery based on actual demand and supply. It also provide better price through bidding process based on manual quality checking.

In the current system grading is done by manually. Two three experts check the product manually and they will give the marks according to some specification example color, taste, manufacturing date etc. Then all expert decide the quality of the product then they provide the grading. After that according to quality and grading bidding process takes place. which increases the manpower and also this process is time consuming.

IV. PROPOSED METHODOLOGY

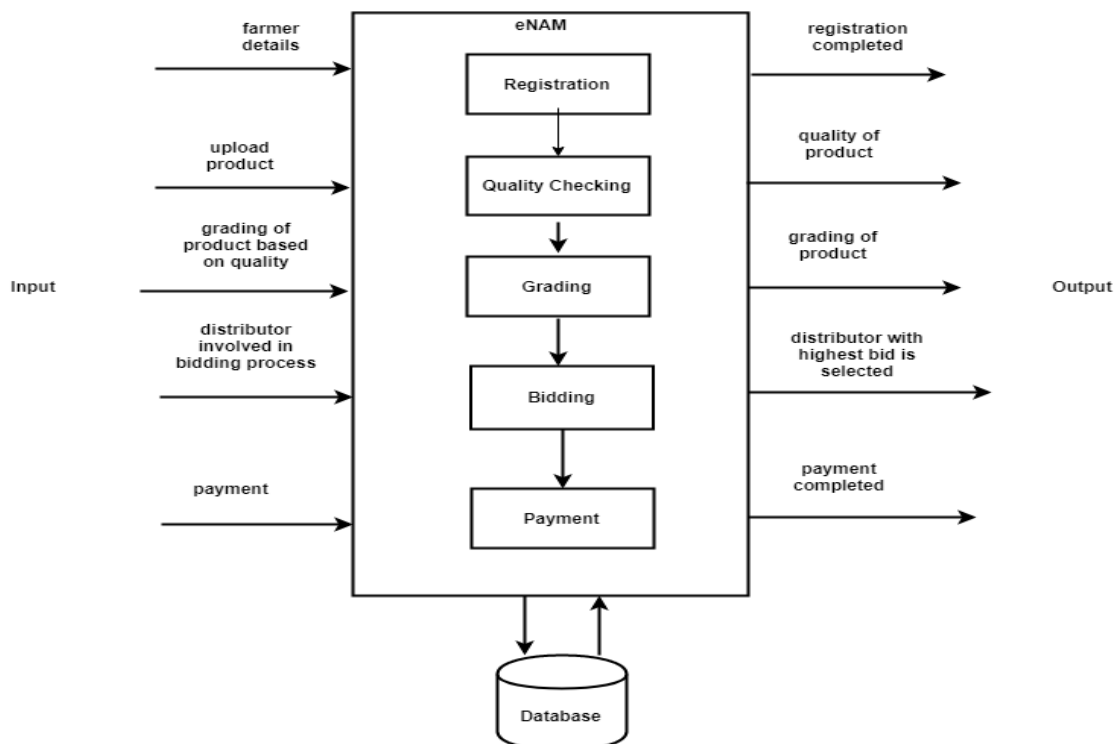


Figure 1:Block Diagram

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The Block Diagram summarizes the workflow of the project, basically eNAM is platform used to analyze the data collected from farmers and accordingly provide grading to the products, based on some Machine Learning Algorithms to predict the quality of the products. After all these bidding will take place on basis of highest bid distributor selection will occurs and that distributor will proceed for payment.

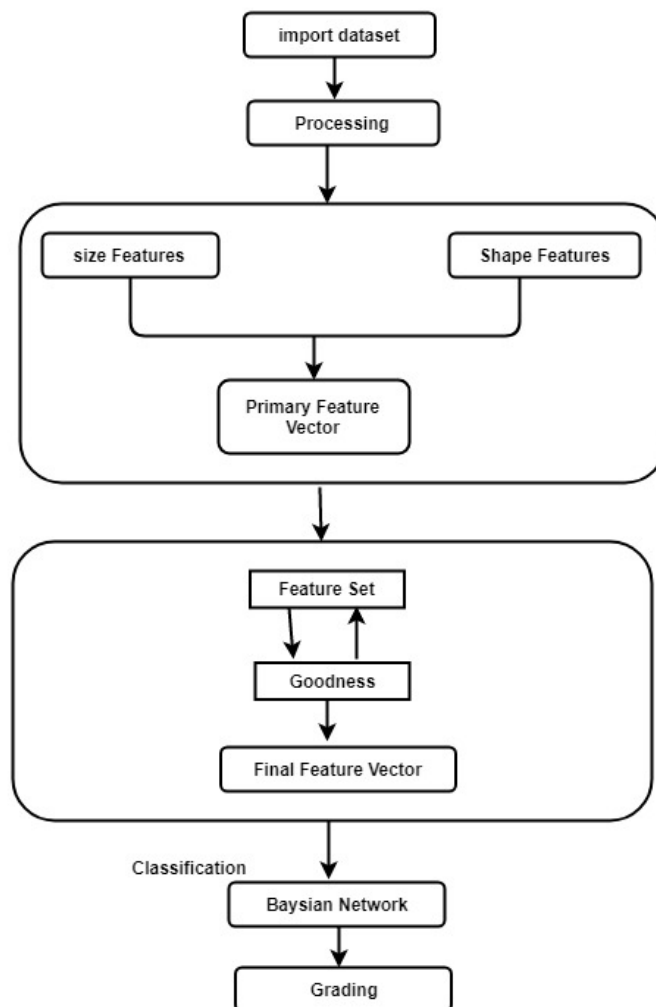


Figure 2: Modular Diagram

eNAM system is collections of several modules such as registration, grading, bidding and payment. The above module diagram is of grading in which the whole process of grading is explained. First of all products are graded on basis of segmentation, features extraction, feature sets, and finally performing Bayesian network.

V. PROPOSED IMPLEMENTATION

To provide uniform experience across multiple platforms, an application is designed which will show all the products that farmers wants to sell and bidding process will starts between all the distributors who are intended to purchase those products.in other words system collects the data,analyzes the data and displays the appropriate information to the

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distributors. This system provides users with accurate and timely information in agriculture production and marketing. Quality checking and grading technique uses naive bayes algorithm.

VI. TECHNIQUES USED IN PROPOSED SYSTEM

A) Naive Bayes algorithm

In machine learning we are often interested in selecting the best hypothesis (h) given data (d).

In a classification problem, our hypothesis (h) may be the class to assign for a new data instance (d). One of the easiest ways of selecting the most probable hypothesis given the data that we have that we can use as our prior knowledge about the problem. Bayes' Theorem provides a way that we can calculate the probability of a hypothesis given our prior knowledge.

Bayes' Theorem is stated as:

$$P(h|d) = (P(d|h) * P(h)) / P(d)$$

Where,

$P(h|d)$ is the probability of hypothesis h given the data d. This is called the posterior probability. $P(d|h)$ is the probability of data d given that the hypothesis h was true.

$P(h)$ is the probability of hypothesis h being true (regardless of the data). This is called the prior probability of h.

$P(d)$ is the probability of the data (regardless of the hypothesis).

We can see that we are interested in calculating the posterior probability of $P(h|d)$ from the prior probability $p(h)$ with $P(D)$ and $P(d|h)$.

After calculating the posterior probability for a number of different hypotheses, you can select the hypothesis with the highest probability. This is the maximum probable hypothesis and may formally be called the maximum a posteriori (MAP) hypothesis

VII. RESULTS

The output screen of the Desktop Application looks as follows. The farmer logs in the application and upload the product as admin can view the product details and system will automatically grade the product using naive bayes algorithm.

once grading and initial amount set by admin , mail will sent to all distributors who are willing to purchase product, distributor can view the product details and then go with the bidding process according to the grade given to the product. The highest bid will be selected and payment will be done by distributor.

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A)Homepage

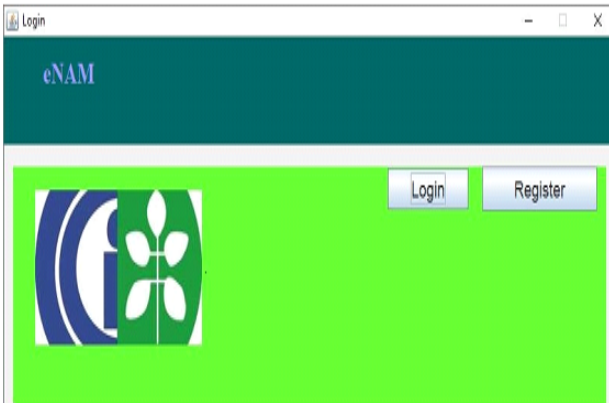


Fig.1 Homepage

B)Product Status

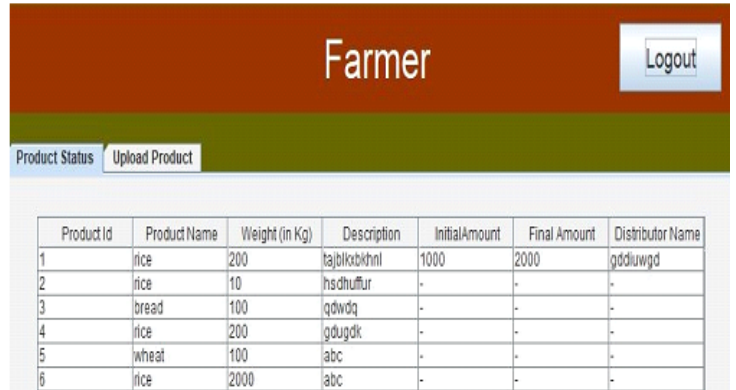


Fig.2 Product Status

C)Uploading the Product

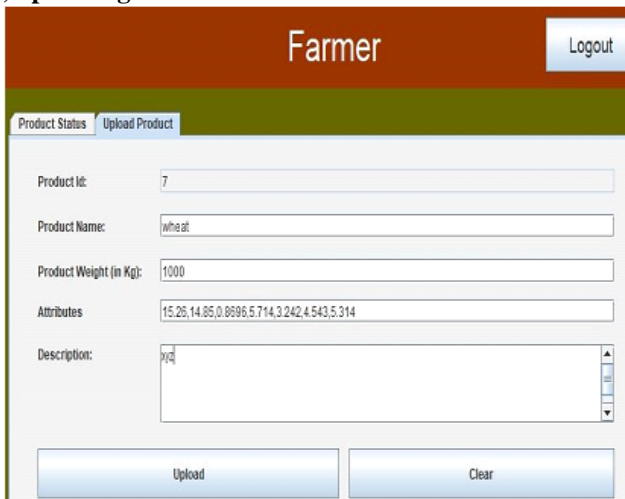


Fig.3 Uploading Product

D)Farmer Details

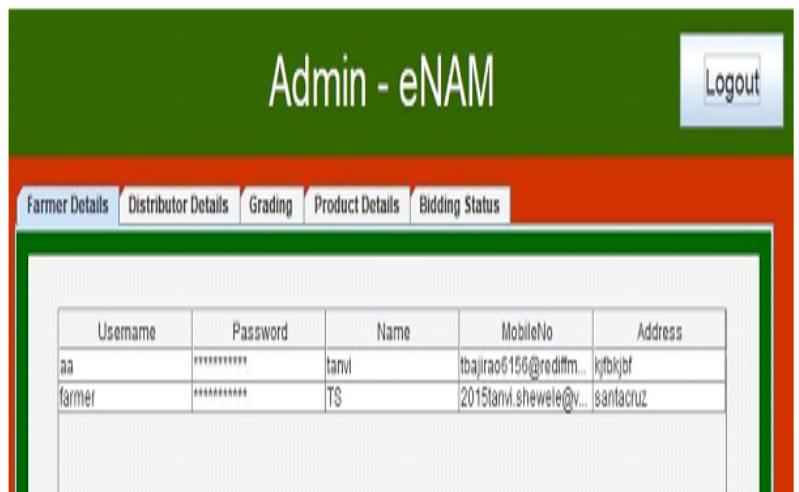


Fig.4 Farmer Details

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E) Distributor Details

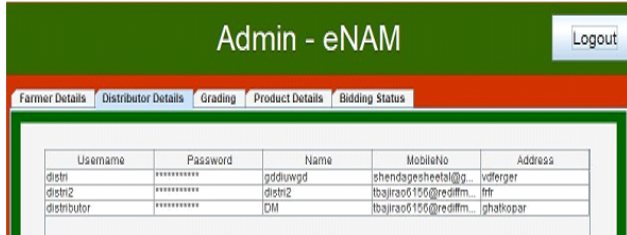


Fig.5 Distributor Details

F) Grading of Products

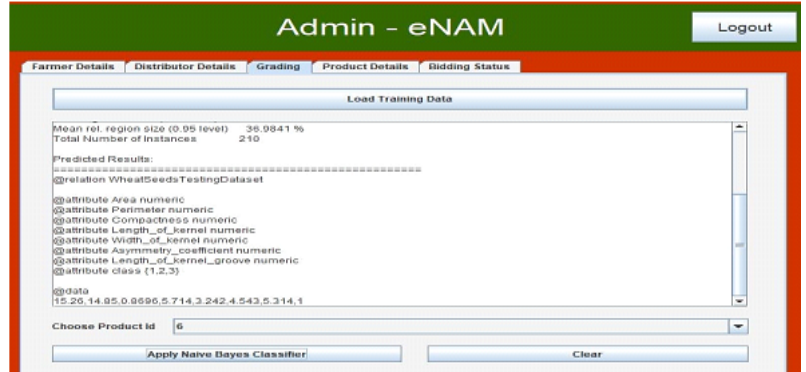


Fig.6 Grading of Products

G) Product details and Setting initial amount

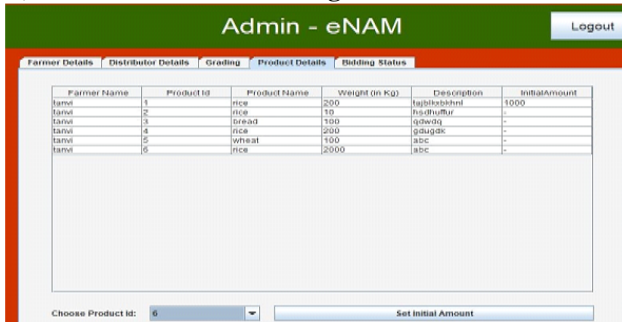


Fig.7 Product Details & Setting initial amount

H) Bidding message sent to Distributors

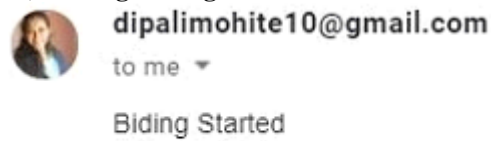


Fig.8 Bidding message

I) Bidding Status

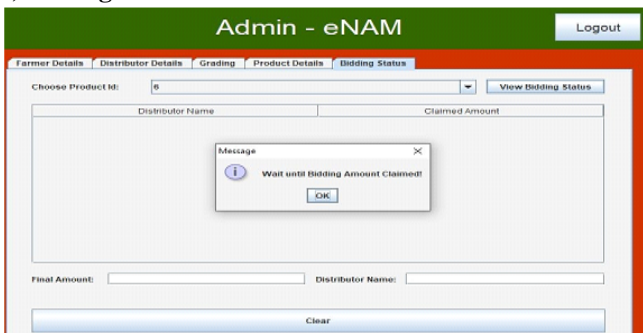


Fig.9 Bidding Status

J) Bidding of the products

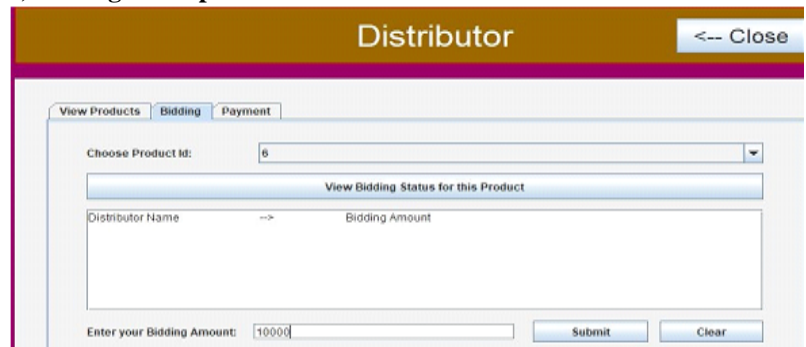


Fig.10 Bidding of Product

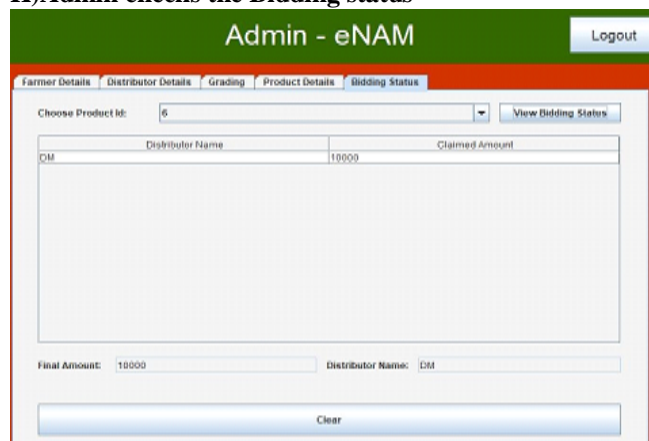
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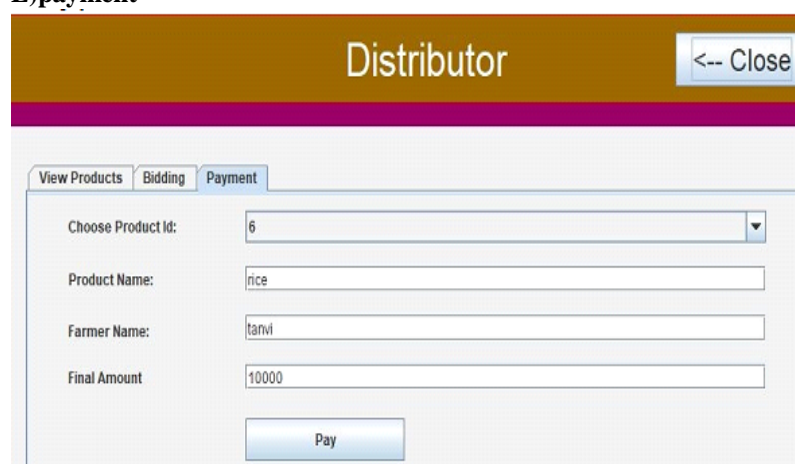
K) Admin checks the Bidding status



The screenshot shows the 'Admin - eNAM' interface. At the top, there is a 'Logout' button. Below it, there are tabs for 'Farmer Details', 'Distributor Details', 'Grading', 'Product Details', and 'Bidding Status'. The 'Bidding Status' tab is active. A dropdown menu for 'Choose Product Id:' is set to '6'. A 'View Bidding Status' button is next to it. Below this, there is a table with two columns: 'Distributor Name' and 'Claimed Amount'. The table contains one row with 'DM' in the first column and '10000' in the second. At the bottom, there are input fields for 'Final Amount:' (10000) and 'Distributor Name:' (DM), and a 'Clear' button.

Fig.11 Admin Checks the Bidding Status

L) payment



The screenshot shows the 'Distributor' interface. At the top, there is a '<-- Close' button. Below it, there are tabs for 'View Products', 'Bidding', and 'Payment'. The 'Payment' tab is active. There are four input fields: 'Choose Product Id:' (6), 'Product Name:' (rice), 'Farmer Name:' (tarvi), and 'Final Amount:' (10000). A 'Pay' button is located at the bottom.

Fig.12 Payment

VIII. CONCLUSION

In any marketing process there is an approach towards profit and benefit. Through this application we can make sure it is profitable for both farmers and distributors. Since farming is still backbone of our nation it is our responsibility keep it as same process. It is very much necessary that we must ease some of the pressure from our farmers so that they will not stop this devine job.

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