

IDENTIFICATION OF POSSIBILITIES FOR CROP GROWTH

Submitted in partial fulfillment of the requirements for
the award of
Bachelor of Engineering degree in Computer Science and Engineering

By

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade "A" by NAAC

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APRIL - 2022



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **VEYIL MUTHU LAKSHMI .A (38110642) and KARTHIKA .K (38110241)** who carried out the project entitled “**IDENTIFICATION OF POSSIBILITIES FOR CROP GROWTH**” under my supervision from November 2021 to April 2022.

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DECLARATION

We **VEYIL MUTHU LAKSHMI .A (38110642)** and **KARTHIKA .K (38110241)** hereby declare that the Project Report entitled **“IDENTIFICATION OF POSSIBILITES FOR CROP GROWTH”** done by us under the guidance of **Dr. S. Suganya** is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering.

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ABSTRACT

Fertilizer value updating has a positive practical significance for guiding agricultural production and for notifying the change in market rate of fertilizer to the farmer. In this project the data analysis technology is used to update the rate change through notification. The notifications are sent immediately when the rate of the fertilizer is changed in the market. Different types of land condition. So, the quality of the fertilizer is identified using ranking process. By this process the rate of the low quality and high-quality fertilizer is also notified. The usage of ensemble of classifiers paves a path way to make a better decision on predictions due to the usage of multiple classifiers. Further, a ranking process is applied for decision making in order to select the classifiers results. This system is used to predict the cost of the fertilizers for further.

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CHAPTER 1

INTRODUCTION

GENERAL

In the world of developing technologies, the success of sharing information will help the agriculturists in realizing and developing their potential. The information sharing is that the valuable and timely information is being shared between agriculturists, either formally or informally. The willingness of information sharing refers to the open attitude among agriculturists. This open attitude determines the degree and scope of information sharing. Using web-technologies like HTML and CSS we build the web application, We create dataset by gathering data from multiple resources and place them in place which is used to predict the price of the fertilizers and results are subjected to non-linear test later priorities are set and rankings are given to the list of fertilizers. Place information in our application and share that information to agriculturists whose data is collected and stored in the MySQL server. we software to automatically send the updated information to the agriculturists in the form of text message.so that agriculturists no need to go to near towns and cities to know the updated information. We will be machine learning algorithms to predict the price of the fertilizers for the next two months. For prediction purpose we will be using Support vector machine(SVM), Naïve Bayes (NB) and K-Nearest Neighbour(KNN) algorithms to predict the cost of the fertilizers for the further usage of the agriculturists. Further, a ranking process is applied for decision making in order to select the classifiers results.

Objective

- Data set collection from various sources.
- Data parsing and cleansing technique is applied to make the raw data into processing data.
- The data collected is subject to machine learning system along with run time analysis makes an efficient fertilizer value updation system.
- Usage of Ensemble of classifiers makes the model more robust and efficient.
- Ranking technique used in the project helps us to make efficient decisions.
- Creating a web application for user registrations and collection of data.

CHAPTER 2

LITERATURE SURVEY

LITERATURE REVIEWS

[1] Title : A Review on Data Mining Techniques for Fertilizer Recommendation,2018

Authors : Jignasha M. Jethva, Nikhil Gondaliya, Vinita Shah

To keep up nutrition levels in the soil in case of deficiency, fertilizers are added to soil. The standard issue existing among the Indian agriculturists choose approximate amount of fertilizers and add them manually. Excess or deficient extension of fertilizers can harm the plants life and reduce the yield. This paper gives overview of various data mining frameworks used on cultivating soil dataset for fertilizer recommendation.

[2] Title : A Survey on Data Mining Techniques in Agriculture,2015

Authors : M.C.S.Geetha

Agriculture is the most critical application area especially in the developing nations like India .Use of information technology in agriculture can change the situation of decision making and farmers can yield in better way. Data mining plays a important role in decision making on several aspects with agriculture field. It examines about role of data mining in the farming field and their related work by a few authors in related to agriculture domain. It additionally talks about on various data mining applications in taking care of the several agriculture problems. This paper integrates the work of several authors in a single place so it is valuable for specialists to get data of current situation of data mining systems and applications in context to farming field.

[3] Title : AgroNutri Android Application,2016

Authors : S. Srija, R. Geetha Chanda, S.Lavanya, Dr. M. Kalpana Ph.D

This paper communicates the idea regarding the making of AgroNutri an android application that helps in conveying the harvest particular fertilizer amount to be applied. The idea is to calculate the measure of NPK composts to be applied depend on the blanked proposal of the crop of interest. This application works depend on the

product chosen by the farmer and that is taken as input, thus providing the farmers. The future scope of the AgroNutri is that GPRS can be included so that according to location nutrients are suggested. Further this application would be incorporated as a piece of the accuracy agriculture wherein sensors can be utilized to discover the measure of NPK present in the dirt and that sum can be deducted from the suggestion and giving us the exact measure of supplements to be added.

[4] Title : Machine Learning: Applications in Indian Agriculture,2016

Authors : Karandeep Kaur

Agriculture is a field that has been lacking from adaption of technologies and their advancements. Indian agriculturists should be up to the mark with the universal procedures. Machine learning is a native concept that can be applied to every field on all inputs and outputs. It has effectively settled its ability over ordinary calculations of software engineering and measurements. Machine learning calculations have improved the exactness of artificial intelligence machines including sensor based frameworks utilized in accuracy farming. This paper has evaluated the different uses of machine learning in the farming area. It additionally gives a knowledge into the inconveniences looked by Indian farmers and how they can be resolved using these procedures.

[5] Title : Impacts of population growth, economic development, and technical change on global food production and consumption,2011

Author: Uwe A. Schneider a,↑, Petr Havlik b, Erwin Schmid c, Hugo Valin b, Aline Mosnier b,c, Michael Obersteiner b, Hannes Bottcher b, Rastislav Skalsky´ d, Juraj Balkovic´ d, Timm Sauer a, Steffen Fritz b

Throughout the following decades humanity will request more food from less land and water assets. This investigation evaluates the food production effects of four elective advancement situations from the Millennium Ecosystem Assessment and the Special Report on Emission Scenarios. partially and jointly considered are land and water supply impacts from population development, and specialized change, and forests and agriculture demand request shifts from population development and economic improvement. The income impacts on nourishment request are registered with dynamic flexibilities. Worldwide farming area increments by up to 14% somewhere in

the range of 2010 and 2030. Deforestation restrictions strongly impact the price of land and water resources but have little consequences for the global level of food production and food prices. While projected income changes have the highest partial impact on per capita food consumption levels, population growth leads to the highest increase in total food production. The impact of technical change is amplified or mitigated by adaptations of land management intensities

[6] Title : Brief history of agricultural systems modelling, 2016

Author: James W. Jones a, John M. Antle b, Bruno O. Basso c, Kenneth J. Boote a, Richard T. Conant d, Ian Foster e, H. Charles J. Godfray f, Mario Herrero g, Richard E. Howitt h, Sander Janssen i, Brian A. Keating g, Rafael Munoz-Carpena a, Cheryl H. Porter a, Cynthia Rosenzweig j, Tim R. Wheeler k

Rural frameworks science creates information that enables analysts to consider complex issues or take educated farming choices. The rich history of this science represents the decent variety of frameworks and scales over which they work and have been contemplated. Demonstrating, a basic apparatus in agrarian frameworks science, has been expert by researchers from an extensive variety of controls, who have contributed ideas and instruments over six decades. As agrarian researchers currently consider the "people to come" models, information, and learning items expected to meet the inexorably mind boggling frameworks issues looked by society, it is vital to check out this history and its exercises to guarantee that we stay away from re-innovation and endeavor to think about all elements of related difficulties. To this end, we outline here the historical backdrop of rural frameworks demonstrating and distinguish exercises discovered that can help control the structure and advancement of up and coming age of farming framework apparatuses and techniques. Various past occasions joined with generally innovative advancement in different fields have unequivocally added to the development of farming framework demonstrating, including improvement of process-based bio-physical models of yields and domesticated animals, factual models dependent on verifiable perceptions, and financial streamlining and reproduction models at family unit and local to worldwide scales. Attributes of rural frameworks models have changed broadly relying upon the frameworks included, their scales, and the extensive variety of purposes that spurred their advancement and use by specialists in various controls. Late patterns in more

extensive joint effort crosswise over establishments, crosswise over orders, and between people in general and private segments recommend that the stage is set for the significant advances in rural frameworks science that are required for the up and coming age of models, databases, learning items and choice emotionally supportive networks. The exercises from history ought to be considered to help stay away from barricades and entanglements as the network builds up this up and coming age of horticultural frameworks models.

[7] Title : A Smart Agricultural Model by Integrating IoT, Mobile and Cloud-based Big Data Analytics,2017

Authors : S.Rajeswari, K.Suthendran, K.Rajkumar.

In the cultivating field, the system models play a significant role to the enhancement of the agro-normal and money related conditions. In the proportions of benefits of the field and farm examinations to give the information and to recognize fitting and fruitful organization practices. It can recognize the organization to arrive managers and transversely over reality as long as the required soil, the board, environment, and money related information. Decision Support Systems (DSSs) use to make the information for the vermin the board, develop the officials. These systems are not using the impelled strategies to process the data. Thusly, use the adroit system thoughts to take the decisions for the issue. It expect a crucial activity in the comprehension of agronomic results, and their use as decision sincerely steady systems for farmers is extending.

[8] Title : An Overview of Internet of Things and Data Analytics in Agriculture: Benefits and Challenges,2018

Authors : Olakunle Elijah, Tharek Abdul Rahman, Igbafe Orikumhi, Chee Yen Leow, Nour Hindia.

A blueprint of IoT and DA in agriculture has been shown in this paper. A couple of zones related to the association of IoT in agribusiness have been discussed in detail. The investigation of composing exhibits that there are clusters of work advancing being produced of IoT development that can be used to increase operational efficiency and gainfulness of plant and creatures. The benefits of IoT and DA, and open troubles have been identified and inspected in this paper. IoT is depended upon to offer a couple

of benefits to the agribusiness division. Regardless, there are up 'til now different issues to be steered to make it moderate for close to nothing and medium-scale farmers. The key issues are security and cost. It is typical that as contention increases in the cultivating part

[9] Title : Circulation Mode Selection Based on Cost Analysis,2017

Authors: Xiurong Sun*, Jingshan Zhang, Chenglin Wang, Tao Zhang

If every farmer and each average production base will join their optimal conditions in making cooperatives, it will accomplish economies of scale. Furthermore, producers will have an all the more favourable position in the plans with downstream firms (shipper or retailer). Second, the main customers of wholesale market are not inhabitants nearby who buy small quantities products but lower distributors or retailers. More redesigned transportation mode respects intensive attempt of new agrarian things, which prompts bolster the movement of new chain joint logistics and strengthen resource utilize and made logistics advantage quality. Refresh everything considered agrarian things spread. By then, regard the examination of gigantic worth control of standard things and achieve the mind blowing control to stream process.

[10] Title: Support Vector Machine-based Fuzzy Self-learning Control for Induction Machines,2010

Authors : Zongkai Shao

Using support vector machine (SVM) is to realize the self learning of fuzzy inference system (FIS), based on a fast modified varying metric method (MDFP) and a support vector machine identifier (SVMI), a SVM-FIS self-learning controller for the threephase induction machine adjustable speed system has been designed. The proposed controller is not only of the advantages that FIS does not depend on the plant model, strong robustness, and adaptive self-learning ability, but also learning ability and generalization performance of SVM. The designed processes of SVM-FIS, MDFP, and SVMI algorithms have been described in details. Simulation results show the feasibility, correctness and effectiveness of the proposed control strategy, such as the excellent static and dynamic performances, and strong anti-interference ability.

[11] Title : Machine Learning Facilitated Rice Prediction in Bangladesh,2015

Authors: Mohammad Motiur Rahman, Naheena Haq, Rashedur M Rahman

In this examination, self organising map (SOM) was utilized to group the information relationship between the information factors. After that chi-square test strategy was utilized to set up the level of reliance between the related variable qualities. It was discovered that the day by day outrageous climate conditions, for example, most extreme and least fluctuation in temperature, precipitation, dampness and wind speed were the principle drivers of product development, yield and wine quality

[12] Title : Support Vector Machine-Based Classification Scheme of Maize Crop,2017

Authors : Suhas S Athani, CH Tejeshwar

This paper says about, advancement of a mechanized framework to distinguish and group weeds from the products would be of extraordinary help and we have proposed a set-up that decreases labour. We have considered pictures of maize edits as the informational index. Separating surface highlights of the picture and applying SVM (support vector machine) to arrange whether the given picture is a weed or a yield

brought about a precision of 82%. In this way, picture preparing is a proficient method to group the given picture about whether it is a weed or a yield. A similar classifier can be connected to recognize number of harvests like groundnut, paddy from weeds. The proposed framework gives a chance to investigate more about element extraction methods. Further research and usage may incorporate building up a mechanized equipment framework which could help in removal of weeds in the fields.

[13] WITH MACHINE LEARNING ALGORITHMS FOR ESTIMATING WINTER WHEAT AREAS,2017

Authors : Y.Z. Pan2

we utilize different kernel functions in the CPPI models to depict the connection between fractional winter wheat area and MODIS EVI time series data. We tried three straight and non-direct kernel functions, including linear regression, artificial neural system, and support vector machine. The differences when utilizing various kernel

functions are minor for areas with basic planting structure. For areas like DT where multiple crop types have comparative phenology cycles, ANN-CPPI is found to play out the best. The two crop types, to be specific winter wheat and rapeseed, can be separated well. These tests give elective answers for the uses of CPPI in mixed areas.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

System : Pentium-IV
Speed : 2.4GHZ
Hard disk : 40GB
Monitor : 15VGA color
RAM : 512MB

SOFTWARE REQUIREMENTS

Operating System : Windows XP
Coding language : Java
IDE : Net beans
Database : MYSQL

CHAPTER 3

METHODOLOGY

EXISTING SYSTEMS

The computational and data demands of structural price forecasting generally far exceed than what is routinely available in developing countries. Consequently, researchers often rely on parsimonious representations of price processes for their forecasting needs. Contemporary parsimonious form of price forecasting relies heavily on time series modelling. In time series modelling, past observations of the same variable are collected and analyzed to develop a model describing the underlying relationship. During the past few decades, much effort has been devoted to the development and improvement of time series forecasting models. Time series modelling requires less onerous data input for regular and up-to date price forecasting. Hence there is a need for better classification which would be an ensemble or hybrid classification model.

DISADVANTAGES OF EXISTING SYSTEM

- Efficiency is low.
- More number of repeated work.

PROPOSED SYSTEMS

In proposed system, the data analysis technology is used to update the rate change through notification. The notifications are send immediately when the rate of the fertilizer is changed in the market. Different types of land condition. So the quality of the fertilizers are identified using ranking process. By this process the rate of the low quality and high quality fertilizer is also notified. The usage of ensemble of classifiers paves a path way to make a better decision on predictions due to the usage of multiple classifiers. Further, a ranking process is applied for decision making in order to select the classifiers results. This system is used to predict the cost of the fertilizers for further. This project uses Ensemble of classifiers such as SVM, NAÏVE BAYES, KNN or hybrid classifier. In addition, this project uses Ranking technique.

ADVANTAGES OF PROPOSED SYSTEM

- Useful to people far away from towns/cities.
- Better time efficiency.
- Reduction of repeated work.

SYSTEM ARCHITECTURE

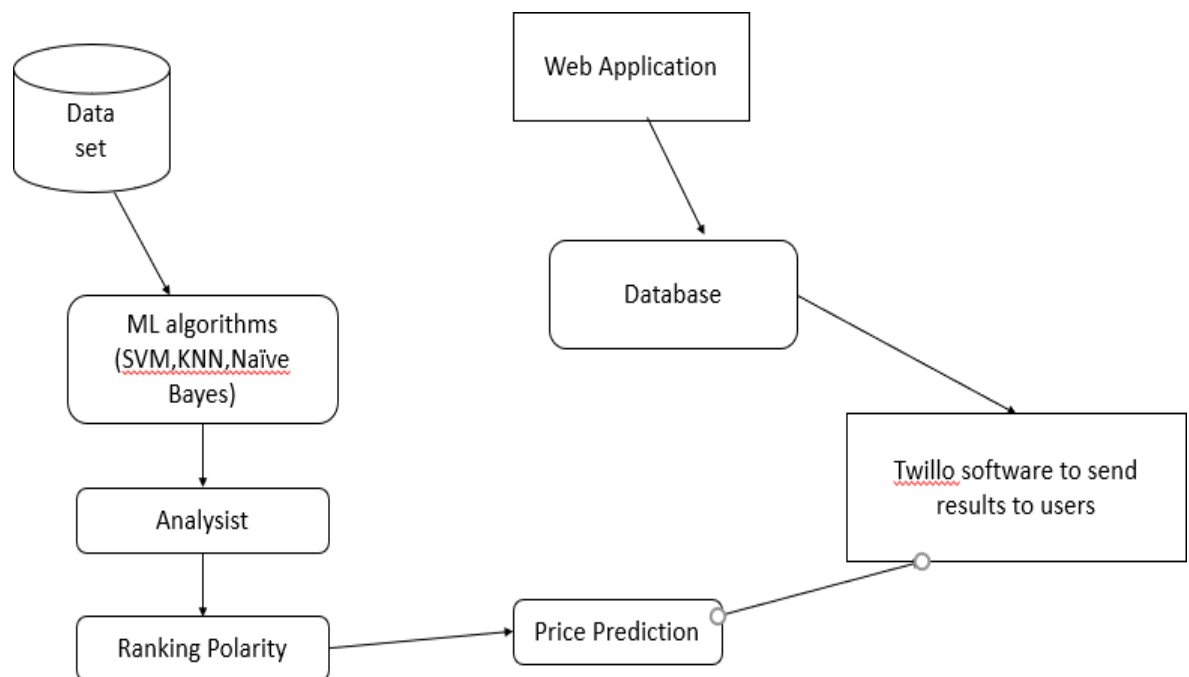


Figure. 3.1 System Architecture

MODULES

1. User Login
2. Registration
3. Calculate Fertilizer Value
4. SMS send to farmers

User Login

This is the first activity, User needs to provide a correct contact number and a password, which user enters while registering, in order to login into the webpage. If information provided by the user matches with the data in the database table then user successfully login into the webpage else message of login failed is displayed and user need to re-enter correct information. A link to the register activity is also provided for registration of new users.

Registration Module

A new user who wants to access the website needs to register first before login. By clicking on register button in login activity, the register activity gets open. A new user registers by entering full name, password and contact number. A user needs to enter password again in confirm password textbox for confirmation. When user enters the information in all textboxes, on the click of register button, the data is transferred to database and user is directed to login activity again. Registered user then needs to login in order to access the webpage. Validations are applied on all the textboxes for proper functioning of the webpage. Like information in each textbox is must that is each textbox, either it is of name, contact, password or confirm password, will not be empty while registering. If any such textbox is empty webpage will give message of information is must in each textbox. Also data in password and confirm password fields must match for successful registration. Another validation is contact number must be valid one that is of 10 digits. If any such validation is violated then registration will be unsuccessful and then user needs to register again. Message that webpage will display when one of the field is empty. If all such information is correct user will be directed to login activity for login into the webpage.

Calculate Fertilizer Value

In this project, Fertilizer value calculated by quality of the fertilizers are identified using ranking process. By this process the rate of the low quality and high quality fertilizer is also notified.

SMS sent to farmers

In this project the data analysis technology is used to update the rate change through notification. The notifications are sent immediately when the rate of the fertilizer is changed in the market. Different types of land condition.

ALGORITHM

- 1) K-Nearest Neighbour (KNN) Algorithm
- 2) Naïve bayes Algorithm
- 3) SVM Algorithm

K- NEAREST NEIGHBOR (KNN) CLASSIFICATION METHOD

K-NN is a type of instance-based learning, or lazy learning, where the function is only approximated locally and all computation is deferred until classification. The k-NN algorithm is among the simplest of all machine learning algorithms. The neighbors are taken from a set of objects for which the class (for k-NN classification) or the object property value (for k-NN regression) is known.

STEP 1: BEGIN

STEP 2: Input: $D = \{(x_1, c_1), \dots, (x_N, c_N)\}$

STEP 3: $x = (x_1, \dots, x_n)$ new instance to be classified

STEP 4: FOR each labelled instance (x_i, c_i) calculate $d(x_i, x)$

STEP 5: Order $d(x_i, x)$ from lowest to highest, $(i = 1, \dots, N)$

STEP 6: Select the K nearest instances to x: D_x^k

STEP 7: Assign to x the most frequent class in D_x^k

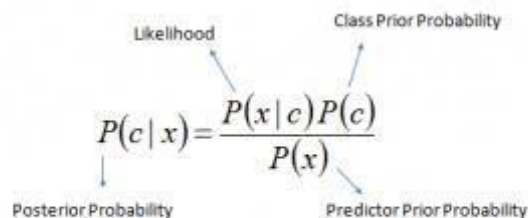
STEP 8: END

NAIVE BAYES ALGORITHM

It is a classification technique based on Bayes' Theorem with an assumption of independence among predictors. In simple terms, a Naive Bayes classifier assumes that the presence of a particular feature in a class is unrelated to the presence of any other feature. For example, a fruit may be considered to be an apple if it is red, round, and about 3 inches in diameter. Even if these features depend on each other or upon the existence of the other features, all of these properties independently contribute to the probability that this fruit is an apple and that is why it is known as 'Naive'.

Naive Bayes model is easy to build and particularly useful for very large data sets. Along with simplicity, Naive Bayes is known to outperform even highly sophisticated classification methods.

Bayes theorem provides a way of calculating posterior probability $P(c|x)$ from $P(c)$, $P(x)$ and $P(x|c)$. Look at the equation below:



The diagram shows the equation $P(c|x) = \frac{P(x|c)P(c)}{P(x)}$ with arrows pointing from labels to the corresponding parts of the equation: 'Likelihood' points to $P(x|c)$, 'Class Prior Probability' points to $P(c)$, 'Posterior Probability' points to $P(c|x)$, and 'Predictor Prior Probability' points to $P(x)$.

$$P(c|X) = P(x_1|c) \times P(x_2|c) \times \dots \times P(x_n|c) \times P(c)$$

Above,

- $P(c|x)$ is the posterior probability of class (*c*, target) given predictor (*x*, attributes).
- $P(c)$ is the prior probability of class.
- $P(x|c)$ is the likelihood which is the probability of predictor given class.
- $P(x)$ is the prior probability of predictor.

How Naive Bayes algorithm works?

Let's understand it using an example. Below I have a training data set of weather and corresponding target variable 'Play' (suggesting possibilities of playing). Now, we need to classify whether players will play or not based on weather condition. Let's follow the below steps to perform it.

Step 1: Convert the data set into a frequency table

Step 2: Create Likelihood table by finding the probabilities like Overcast probability = 0.29 and probability of playing is 0.64.

Weather	Play
Sunny	No
Overcast	Yes
Rainy	Yes
Sunny	Yes
Sunny	Yes
Overcast	Yes
Rainy	No
Rainy	No
Sunny	Yes
Rainy	Yes
Sunny	No
Overcast	Yes
Overcast	Yes
Rainy	No

Frequency Table		
Weather	No	Yes
Overcast		4
Rainy	3	2
Sunny	2	3
Grand Total	5	9

Likelihood table				
Weather	No	Yes		
Overcast		4	=4/14	0.29
Rainy	3	2	=5/14	0.36
Sunny	2	3	=5/14	0.36
All	5	9		
	=5/14	=9/14		
	0.36	0.64		

Figure. 3.2 Naïve Baye's Classifier

Step 3: Now, use Naive Bayesian equation to calculate the posterior probability for each class. The class with the highest posterior probability is the outcome of prediction.

Problem: Players will play if weather is sunny. Is this statement is correct?

We can solve it using above discussed method of posterior probability.

$$P(\text{Yes} \mid \text{Sunny}) = P(\text{Sunny} \mid \text{Yes}) * P(\text{Yes}) / P(\text{Sunny})$$

Here we have $P(\text{Sunny} \mid \text{Yes}) = 3/9 = 0.33$, $P(\text{Sunny}) = 5/14 = 0.36$, $P(\text{Yes}) = 9/14 = 0.64$

Now, $P(\text{Yes} \mid \text{Sunny}) = 0.33 * 0.64 / 0.36 = 0.60$, which has higher probability.

Naive Bayes uses a similar method to predict the probability of different class based on various attributes. This algorithm is mostly used in text classification and with problems having multiple classes.

What are the Pros and Cons of Naive Bayes?

Pros:

- It is easy and fast to predict class of test data set. It also perform well in multi class prediction
- When assumption of independence holds, a Naive Bayes classifier performs better compare to other models like logistic regression and you need less training data.
- It perform well in case of categorical input variables compared to numerical variable(s). For numerical variable, normal distribution is assumed (bell curve, which is a strong assumption).

Cons:

- If categorical variable has a category (in test data set), which was not observed in training data set, then model will assign a 0 (zero) probability and will be unable to make a prediction. This is often known as “Zero Frequency”. To solve this, we can use the smoothing technique. One of the simplest smoothing techniques is called Laplace estimation.
- On the other side naive Bayes is also known as a bad estimator, so the probability outputs from predict_proba are not to be taken too seriously.
- Another limitation of Naive Bayes is the assumption of independent predictors. In real life, it is almost impossible that we get a set of predictors which are completely independent.

Applications of Naive Bayes Algorithms

- **Real time Prediction:** Naive Bayes is an eager learning classifier and it is sure fast. Thus, it could be used for making predictions in real time.

- **Multi class Prediction:** This algorithm is also well known for multi class prediction feature. Here we can predict the probability of multiple classes of target variable.
- **Text classification/ Spam Filtering/ Sentiment Analysis:** Naive Bayes classifiers mostly used in text classification (due to better result in multi class problems and independence rule) have higher success rate as compared to other algorithms. As a result, it is widely used in Spam filtering (identify spam e-mail) and Sentiment Analysis (in social media analysis, to identify positive and negative customer sentiments)
- **Recommendation System:** Naive Bayes Classifier and Collaborative Filtering together builds a Recommendation System that uses machine learning and data mining techniques to filter unseen information and predict whether a user would like a given resource or not

SVM (Support Vector Machine):

- For a dataset consisting of features set and labels set, an SVM classifier builds a model to predict classes for new examples. It assigns new example/data points to one of the classes. If there are only 2 classes then it can be called as a Binary SVM Classifier.
- There are 2 kinds of SVM classifiers:
- Linear SVM Classifier
- Non-Linear SVM Classifier

SVM Linear Classifier:

In the linear classifier model, we assumed that training examples plotted in space. These data points are expected to be separated by an apparent gap. It predicts a straight hyperplane dividing 2 classes. The primary focus while drawing the hyperplane is on maximizing the distance from hyperplane to the nearest data point of either class. The drawn hyperplane called as a maximum-margin hyperplane.

SVM Non-Linear Classifier:

In the real world, our dataset is generally dispersed up to some extent. To solve this problem separation of data into different classes on the basis of a straight linear hyperplane can't be considered a good choice. For this Vapnik suggested creating Non-Linear Classifiers by applying the kernel trick to maximum-margin hyperplanes. In Non-Linear SVM Classification, data points plotted in a higher dimensional space.

Examples of SVM boundaries

In this section, we will learn about selecting best hyperplane for our classification. We will show data from 2 classes. The classes represented by triangle and circle.

Case 1:

Consider the case in Fig 2, with data from 2 different classes. Now, we wish to find the best hyperplane which can separate the two classes. Please check Fig 1. on the right to find which hyperplane best suit this use case. In SVM, we try to maximize the distance between hyperplane & nearest data point. This is known as margin. Since 1st decision boundary is maximizing the distance between classes on left and right. So, our maximum margin hyperplane will be "1st".

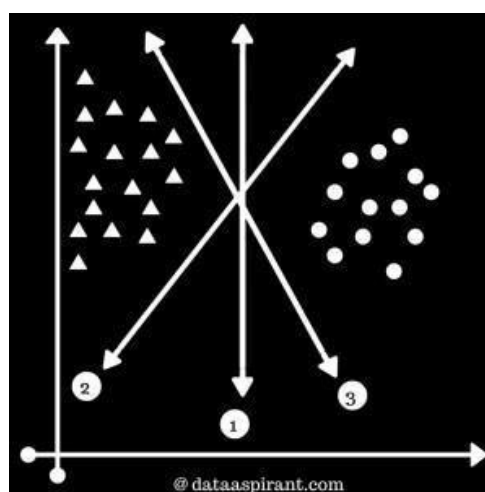


Figure. 3.3 SVM Linear Classifier

Case 2:

Consider the case in Fig 2, with data from 2 different classes. Now, we wish to find the best hyperplane which can separate the two classes. As data of each class is distributed either on left or right. Our motive is to select hyperplane which can separate the classes with maximum margin. In this case, all the decision boundaries are separating classes but only 1st decision boundary is showing maximum margin between $\blacktriangle$ & $\bullet$.

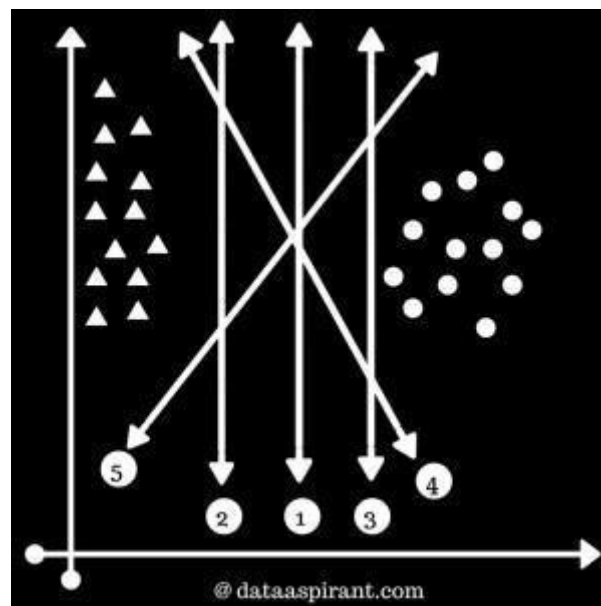


Figure. 3.4 SVM Non-Linear Classifier

DATA FLOW DIAGRAM

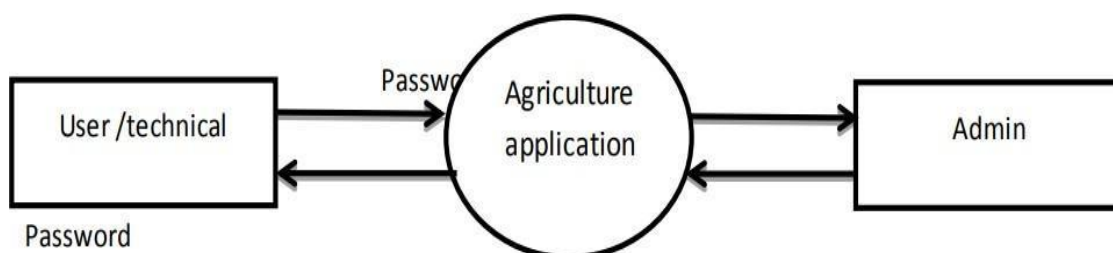


Figure 3.5 Data Flow Diagram

LEVEL-1

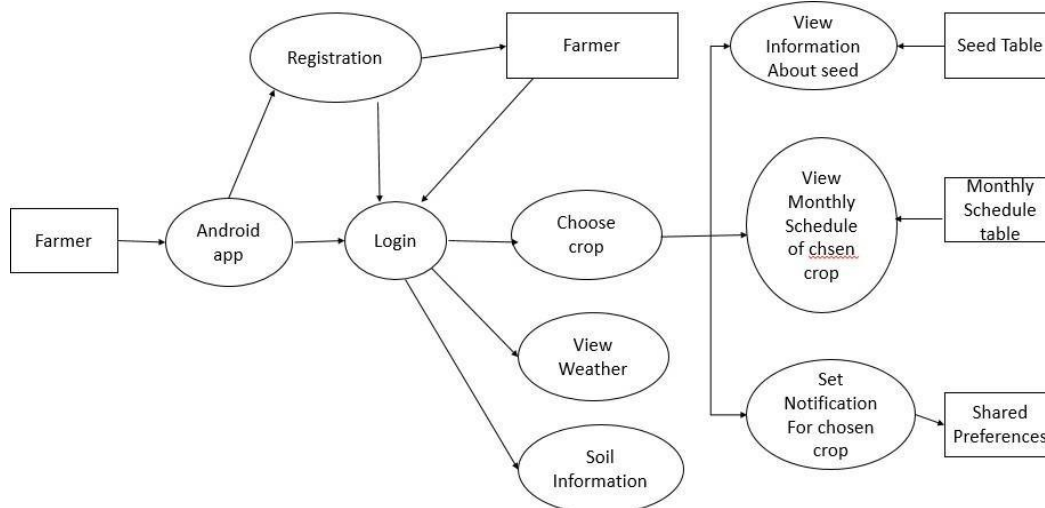


Figure. 3.6 Level-1 Data Flow Diagram

LEVEL-2

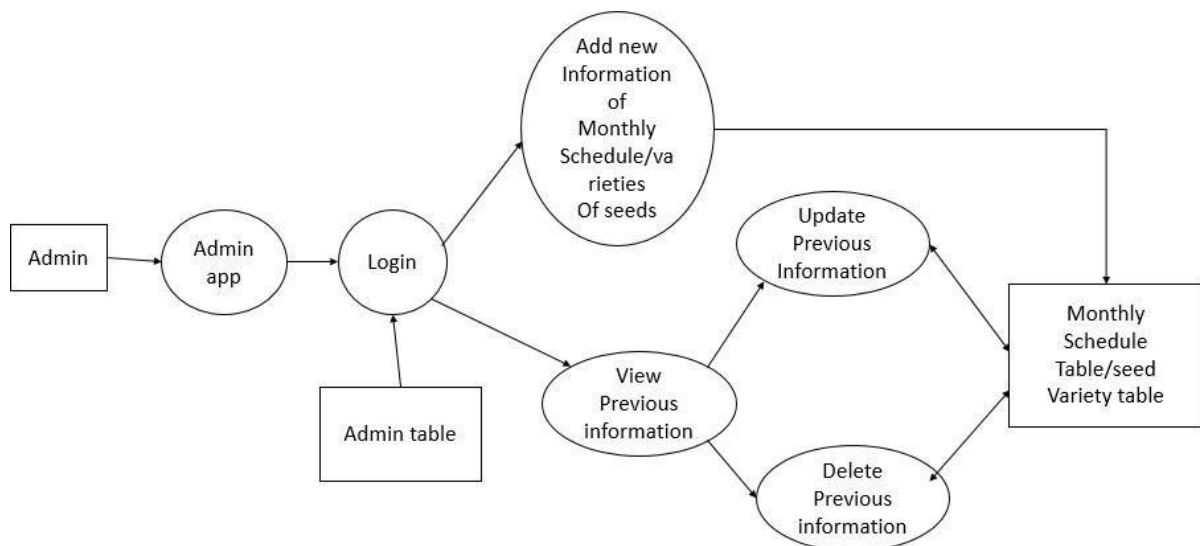


Figure. 3.7 Level-2 Data Flow Diagram

UML DIAGRAM

UML is simply another graphical representation of a common semantic model. UML provides a comprehensive notation for the full lifecycle of object-oriented development.

ADVANTAGES

- To represent complete systems (instead of only the software portion) using object oriented concepts
- To establish an explicit coupling between concepts and executable code
- To take into account the scaling factors that are inherent to complex and critical systems
- To creating a modeling language usable by both humans and machines
- UML defines several models for representing systems
- The class model captures the static structure
- The state model expresses the dynamic behavior of objects
- The use case model describes the requirements of the user
- The interaction model represents the scenarios and messages flows
- The implementation model shows the work units
- The deployment model provides details that pertain to process allocation

USECASE DIAGRAM

Use case diagrams overview the usage requirement for system. They are useful for presentations to management and/or project stakeholders, but for actual development you will find that use cases provide significantly more value because they describe “the meant” of the actual requirements.

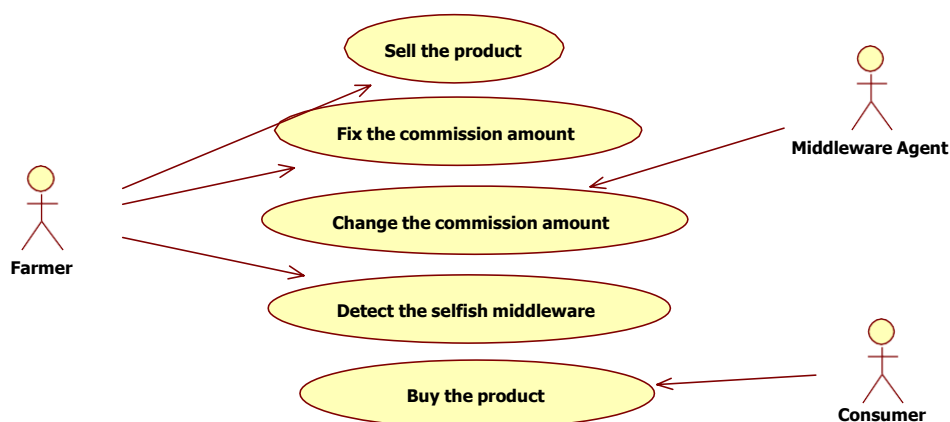


Figure. 3.8. Usecase Diagram

ACTIVITY DIAGRAM

Activity diagram are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. The activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. Activity diagram consist of Initial node, activity final node and activities in between.

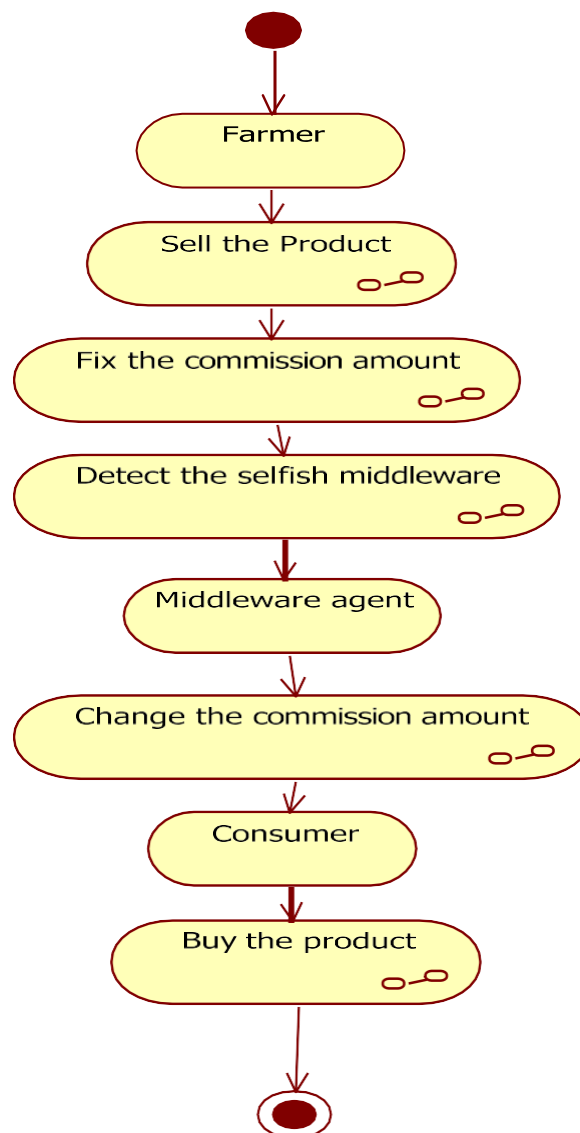


Figure. 3.9. Activity Diagram

SEQUENCE DIAGRAM

Sequence diagram model the flow of logic within your system in a visual manner, enabling you both to document and validate your logic, and commonly used for both analysis and design purpose. Sequence diagram are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within your system.

JAVA LANGUAGE

Introduction to Java

Java is one of the world's most important and widely used computer languages, and it has held this distinction for many years. Unlike some other computer languages whose influence has weared with passage of time, while Java's has grown.

Application of Java

Java is widely used in every corner of world and of human life. Java is not only used in software but is also widely used in designing hardware controlling software components. There are more than 930 million JRE downloads each year and 3 billion mobile phones run java.

Following are some other usage of Java:

- Developing Desktop Applications
- Web Applications like Linkedin.com, Snapdeal.com etc
- Mobile Operating System like Android
- Embedded Systems
- Robotics and games etc.

Features of Java

The prime reason behind creation of Java was to bring portability and security feature into a computer language. Beside these two major features, there were many other features that played an important role in moulding out the final form of this outstanding language. Those features are :

1) Simple

Java is easy to learn and its syntax is quite simple, clean and easy to understand. The confusing and ambiguous concepts of C++ are either left out in Java or they have been re-implemented in a cleaner way.

2) Object Oriented

In java everything is Object which has some data and behaviour. Java can be easily extended as it is based on Object Model.

3) Robust

Java makes an effort to eliminate error prone codes by emphasizing mainly on compile time error checking and runtime checking. But the main areas which Java improved were Memory Management and mishandled Exceptions by introducing automatic Garbage Collector and Exception Handling.

4) Platform Independent

Unlike other programming languages such as C, C++ etc. which are compiled into platform specific machines. Java is guaranteed to be write-once, run-anywhere language. On compilation Java program is compiled into byte code. This byte code is platform independent and can be run on any machine, plus this byte code format also provide security. Any machine with Java Runtime Environment can run Java Programs.

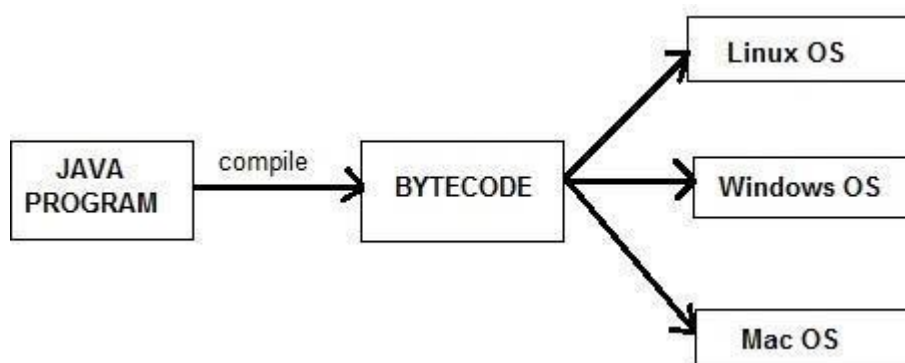


Figure. 3.10. Java Feature Diagram

5) Secure

When it comes to security, Java is always the first choice. With java secure features it enable us to develop virus free, temper free system. Java program always runs in Java runtime environment with almost null interaction with system OS, hence it is more secure.

6) Multi-Threading

Java multithreading feature makes it possible to write program that can do many tasks simultaneously. Benefit of multithreading is that it utilizes same memory and other resources to execute multiple threads at the same time, like While typing, grammatical errors are checked along.

7) Architectural Neutral

Compiler generates byte codes, which have nothing to do with a particular computer architecture, hence a Java program is easy to interpret on any machine.

8) Portable

Java Byte code can be carried to any platform. No implementation dependent features. Everything related to storage is predefined, example: size of primitive data types.

10) High Performance

Java is an interpreted language, so it will never be as fast as a compiled language like C or C++. But, Java enables high performance with the use of just-in-time compiler.

Collection Framework

Collection framework was not part of original Java release. Collections was added to J2SE 1.2. Prior to Java 2, Java provided adhoc classes such as Dictionary, Vector, Stack and Properties to store and manipulate groups of objects. Collection framework provides many important classes and interfaces to collect and organize group of alike objects.

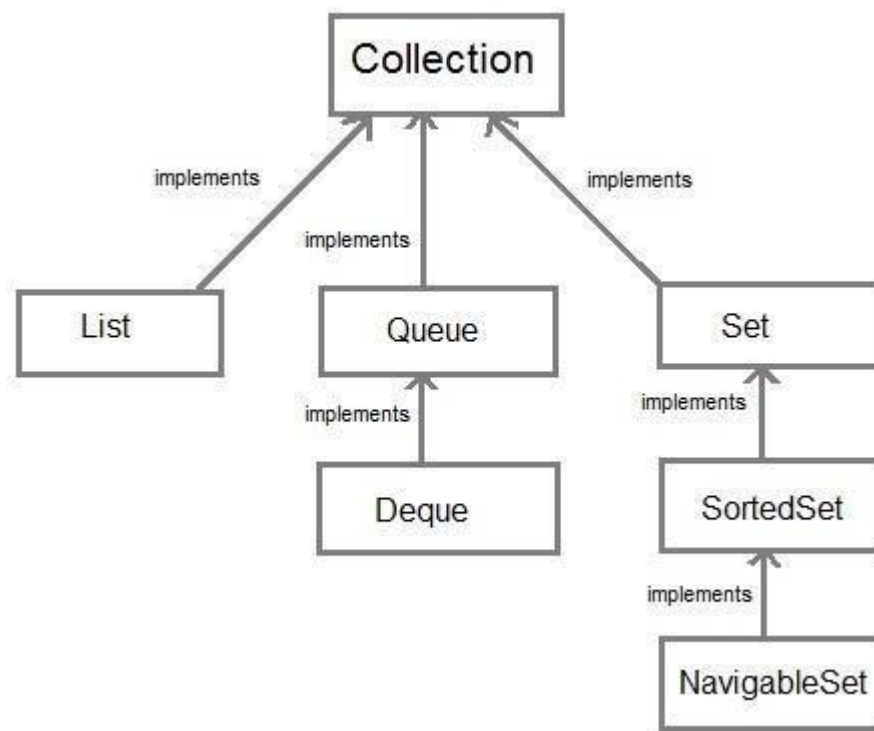


Figure. 3.11 Collection Framework Diagram

MY SQL

MySQL, officially, but also called "My Sequel" is the world's most widely used open-source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases, though SQLite probably has more total embedded deployments. The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks). LAMP is an acronym for "Linux, Apache, MySQL and Perl/PHP/Python." Free software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, Drupal and other software. MySQL is also used

in many high-profile, large-scale websites, including Wikipedia, Google (though not for searches), Facebook, Twitter, Flickr and YouTube.

NETBEANS

Net Beans IDE is the official IDE for Java 8. With its editors, code analyzers, and converters, you can quickly and smoothly upgrade your applications to use new Java 8 language constructs, such as lambdas, functional operations, and method references. Batch analyzers and converters are provided to search through multiple applications at the same time, matching patterns for conversion to new Java 8 language constructs. With its constantly improving Java Editor, many rich features and an extensive range of tools, templates and samples, Net Beans IDE sets the standard for developing with cutting edge technologies out of the box.

Java Networking

The term network programming refers to writing programs that execute across multiple devices (computers), in which the devices are all connected to each other using a network.

The java.net package provides support for the two common network protocols:

- **TCP:** TCP stands for Transmission Control Protocol, which allows for reliable communication between two applications. TCP is typically used over the Internet Protocol, which is referred to as TCP/IP.
- **UDP:** UDP stands for User Datagram Protocol, a connection-less protocol that allows for packets of data to be transmitted between applications.

This tutorial gives good understanding on the following two subjects:

- **Socket Programming:** This is most widely used concept in Networking and it has been explained in very detail.
- **URL Processing:** This would be covered separately. [Click here to learn about URL Processing in Java language.](#)

REQUIREMENT ANALYSIS

Requirement analysis, also called requirement engineering, is the process of determining user expectations for a new modified product. It encompasses the tasks that determine the need for analysing, documenting, validating and managing software or system requirements. The requirements should be documentable, actionable, measurable, testable and traceable related to identified business needs or opportunities and define to a level of detail, sufficient for system design.

FUNCTIONAL REQUIREMENTS

It is a technical specification requirement for the software products. It is the first step in the requirement analysis process which lists the requirements of particular software systems including functional, performance and security requirements. The function of the system depends mainly on the quality hardware used to run the software with given functionality.

1) Usability : It specifies how easy the system must be use. It is easy to ask queries in any format which is short or long, porter stemming algorithm stimulates the desired response for user.

2) Robustness : It refers to a program that performs well not only under ordinary conditions but also under unusual conditions. It is the ability of the user to cope with errors for irrelevant queries during execution.

3) Security : The state of providing protected access to resource is security. The system provides good security and unauthorized users cannot access the system there by providing high security.

4) Reliability : It is the probability of how often the software fails. The measurement is often expressed in MTBF (Mean Time Between Failures). The requirement is needed in order to ensure that the processes work correctly and completely without being aborted. It can handle any load and survive and survive and even capable of working around any failure.

5) Compatibility : It is supported by version above all web browsers. Using any web servers like localhost makes the system real-time experience.

6) Flexibility : The flexibility of the project is provided in such a way that it has the ability to run on different environments being executed by different users.

7) Safety : Safety is a measure taken to prevent trouble. Every query is processed in a secured manner without letting others to know one's personal information.

NON- FUNCTIONAL REQUIREMENTS

1) Portability : It is the usability of the same software in different environments. The project can be run in any operating system.

2) Performance : These requirements determine the resources required, time interval, throughput and everything that deals with the performance of the system.

3) Accuracy : The result of the requesting query is very accurate and high speed of retrieving information. The degree of security provided by the system is high and effective.

4) Maintainability : Project is simple as further updates can be easily done without affecting its stability. Maintainability basically defines that how easy it is to maintain the system. It means that how easy it is to maintain the system, analyse, change and test the application. Maintainability of this project is simple as further updates can be easily done without affecting its stability.

CHAPTER 4

RESULT AND DISCUSSIONS

SYSTEM DESIGN

Input Design : The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

Output Design :

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making.

The output form of an information system should accomplish one or more of the following objectives.

- Convey information about past activities, current status or projections of the
- Future.
- Signal important events, opportunities, problems, or warnings.
- Trigger an action.
- Confirm an action

SYSTEM TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product it is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

Types of Testing

1. White Box Testing
2. Black Box Testing
3. Unit Testing
4. Integration Testing
5. Alpha Testing
6. Beta Testing

Unit Testing : Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program input produces valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

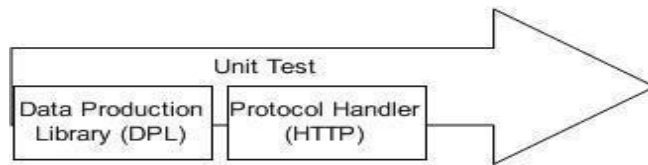


Figure. 4.1 Unit Testing

Integration Testing : Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Functional Testing : Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system.

Functional testing is centered on the following items:

- **Valid Input** is used to identified classes of valid input must be accepted.
- **Invalid Input** is used to identified classes of invalid input must be rejected.
- **Functions** is used to identified functions must be exercised.
- **Output** is used to identify classes of application outputs.
- **Systems/Procedures** is used to interfacing systems or procedures must be invoked. Organization and preparation of functional tests is focused on requirements, key functions, or special test cases.

In addition, systematic coverage pertaining to identify Business process flows, data fields, predefined processes, and successive Processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

System Testing : System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test.

System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

White Box Testing : White Box Testing is a testing in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing : Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you **cannot “see” into it. The test provides inputs and responds to outputs without** considering how the software works.

Test Strategy and Approach

Field testing will be performed manually and functional tests will be written in detail.

Test Objectives

- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.
- Features to be tested
- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

Integration Testing : Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects. The task of the integration test is to check that components or software applications.

Acceptance Testing : User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system

meets the functional requirements.

Alpha Testing : In software development, alpha test will be a test among the teams to confirm that your product works. Originally, the term alpha test meant the first phase of testing in a software development process. The first phase includes unit testing, component testing, and system testing. It also enables us to test the product on the lowest common denominator machines to make sure download times are acceptable and pre loaders work.

Beta Testing : In software development, a beta test is the second phase of software testing in which a sampling of the intended audience tries the product out. Beta testing can be considered "pre-release testing." Beta test versions of software are now distributed to curriculum specialists and teachers to give the program a "real world" test.

CHAPTER 5

CONCLUSION AND FUTURE WORK

CONCLUSION

This open attitude determines the degree and scope of information sharing. Big data analysis technology can effectively improve the performance of fertilizer value updation. This project proposes a novel intelligent system for agricultural fertilizer price prediction based on fertilizer cost. The key idea is to use ensemble of classifiers for prediction. The usage of ensemble of classifiers paves a path way to make a better decision on predictions due to the usage of multiple classifiers. Further, a ranking process is applied for decision making in order to select the classifiers results. This system is used to predict the cost of the fertilizers for further.

FUTURE ENHANCEMENT

In this project the data analysis technology is used to update the rate change through notification. The notifications are send immediately when the rate of the fertilizer is changed in the market. Different types of land condition. So the quality of the fertilizers are identified using ranking process. By this process the rate of the low quality and high quality fertilizer is also notified. The usage of ensemble of classifiers paves a path way to make a better decision on predictions due to the usage of multiple classifiers. Further, a ranking process is applied for decision making in order to select the classifiers results. This system is used to predict the cost of the fertilizers for further.

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- [5] Y. Wang, "A neural network adaptive control based on rapid learning method and its application," Advances In Modeling and Analysis, Vol. 46(3), pp. 27-34,1994.

WEBSITES:

- [1] <https://www.frontiersin.org/articles/10.3389/fpls.2019.00621/full>
- [2] <http://www.bae.ksu.edu/mobileirrigationlab/crop-yield-predictor>
- [3] <https://www.farmersedge.ca/predicting-the-future-today-with-yield-prediction/>

TEXTBOOKS:

- [1] Modern Techniques for Agricultural Disease management and Crop Yield Prediction by N.Pradeep
- [2] Genetic and Production innovations in Field Crop Technology by Manjit S. Kang
- [3] Nutrient Deficiencies of Field Crops : Guide to Diagnosis and Management by M.KSharma

A.SAMPLE CODE

APPENDIX

CRYPTO.JAVA

```
import java.util.Properties;
import javax.mail.Message;
import javax.mail.MessagingException;
import javax.mail.PasswordAuthentication;
import javax.mail.Session;
import javax.mail.Transport;
import javax.mail.internet.InternetAddress;
import javax.mail.internet.MimeMessage;

public class Mail {
    public boolean secretMail(String msg, String userid, String to,String sub) {
        Properties props = new Properties();

        props.put("mail.smtp.host", "smtp.gmail.com");
        props.put("mail.smtp.socketFactory.port", "465");
        props.put("mail.smtp.socketFactory.class",
            "javax.net.ssl.SSLSocketFactory");
        props.put("mail.smtp.auth", "true");
        props.put("mail.smtp.port", "465");
        // Assuming you are sending email from localhost
        Session session = Session.getDefaultInstance(props,
            new javax.mail.Authenticator() {
                protected PasswordAuthentication getPasswordAuthentication() {
                    return new PasswordAuthentication("benkinfo8@gmail.com",
"dob11011993");
                }
            });
    }
}
```

```

System.out.println("Message " + msg);
try {
    Message message = new MimeMessage(session);
    message.setFrom(new InternetAddress(userid));
    message.setRecipients(Message.RecipientType.TO,
        InternetAddress.parse(to));
    message.setSubject(sub);
    message.setText(msg);

    Transport.send(message);

    System.out.println("Done");
    return true;

} catch (MessagingException e) {
    System.out.println(e);
    e.printStackTrace();
    return false;
    // throw new RuntimeException(e);
}
}
}

```

MAIL.JAVA

```

import java.util.Properties;
import javax.mail.Message;
import javax.mail.MessagingException;
import javax.mail.PasswordAuthentication;
import javax.mail.Session;
import javax.mail.Transport;
import javax.mail.internet.InternetAddress;

```

```

import javax.mail.internet.MimeMessage;

public class Mail {

    public boolean secretMail(String msg, String userid, String to,String sub) {
        Properties props = new Properties();
        props.put("mail.smtp.host", "smtp.gmail.com");
        props.put("mail.smtp.socketFactory.port", "465");
        props.put("mail.smtp.socketFactory.class",
            "javax.net.ssl.SSLSocketFactory");
        props.put("mail.smtp.auth", "true");
        props.put("mail.smtp.port", "465");
        // Assuming you are sending email from localhost
        Session session = Session.getDefaultInstance(props,
            new javax.mail.Authenticator() {
                protected PasswordAuthentication getPasswordAuthentication() {
                    return new PasswordAuthentication("benkinfo8@gmail.com",
"dob11011993");
                }
            });

        System.out.println("Message " + msg);
        try {
            Message message = new MimeMessage(session);
            message.setFrom(new InternetAddress(userid));
            message.setRecipients(Message.RecipientType.TO,
                InternetAddress.parse(to));
            message.setSubject(sub);
            message.setText(msg);

            Transport.send(message);

```

```
        System.out.println("Done");  
        return true;  
  
    } catch (MessagingException e) {  
        System.out.println(e);  
        e.printStackTrace();  
        return false;  
        // throw new RuntimeException(e);  
    }  
}
```

REG.JAVA

```
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import java.util.Random;
import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
@WebServlet(urlPatterns = {"/reg"})
public class reg extends HttpServlet {
    Connection con=null;
        Statement st=null;
        ResultSet rs=null;
        Statement st1=null;
        RequestDispatcher rd=null;
        protected void processRequest(HttpServletRequest request,
        HttpServletResponse response)
            throws ServletException, IOException {
            response.setContentType("text/html;charset=UTF-8");
            try (PrintWriter out = response.getWriter()) {
```

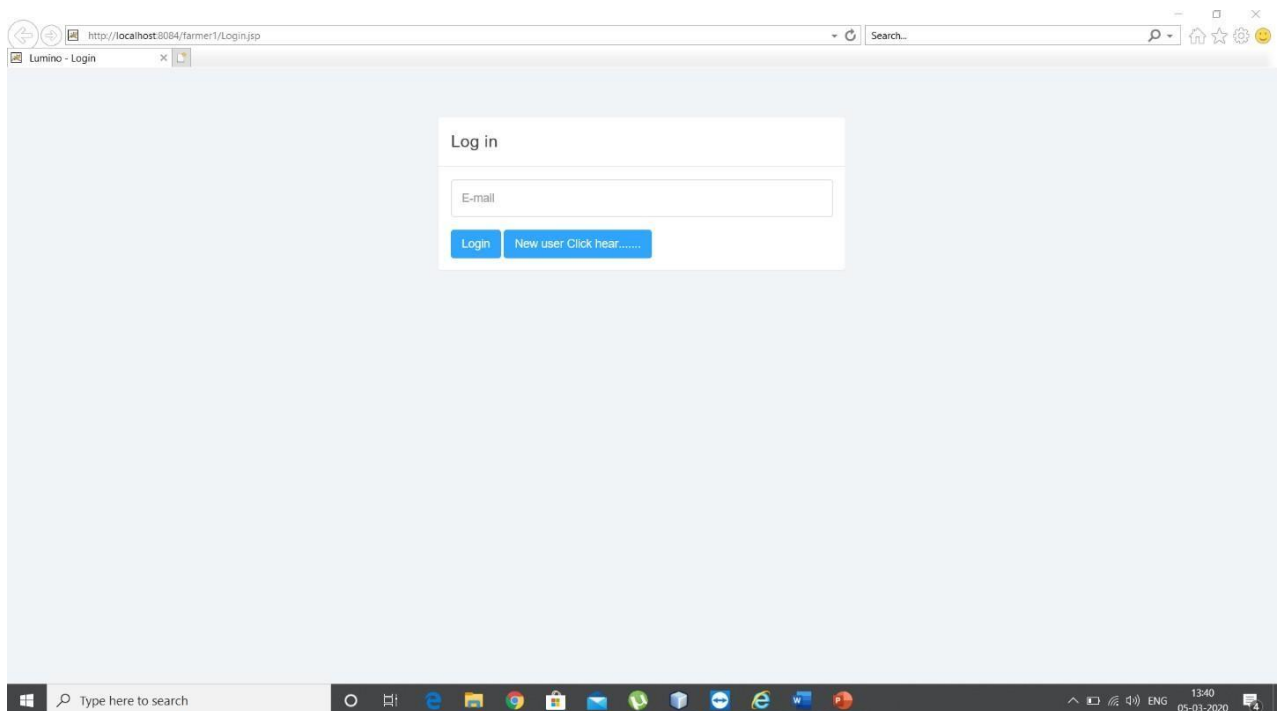
```

/* TODO output your page here. You may use following sample code. */
out.println("<!DOCTYPE html>");
out.println("<html>");
out.println("<head>");
out.println("<title>Servlet reg</title>");
out.println("</head>");
out.println("<body>");
out.println("<h1>Servlet reg at " + request.getContextPath() + "</h1>");
out.println("</body>");
out.println("</html>");
}
}

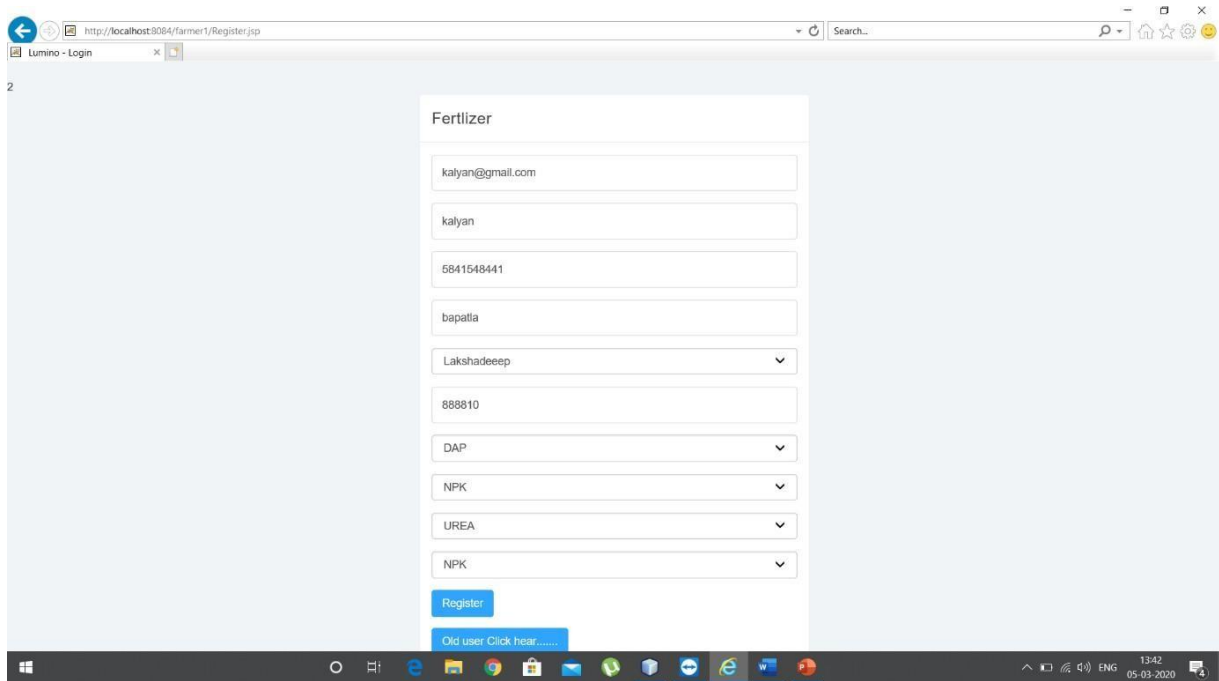
```

B.SCREENSHOTS

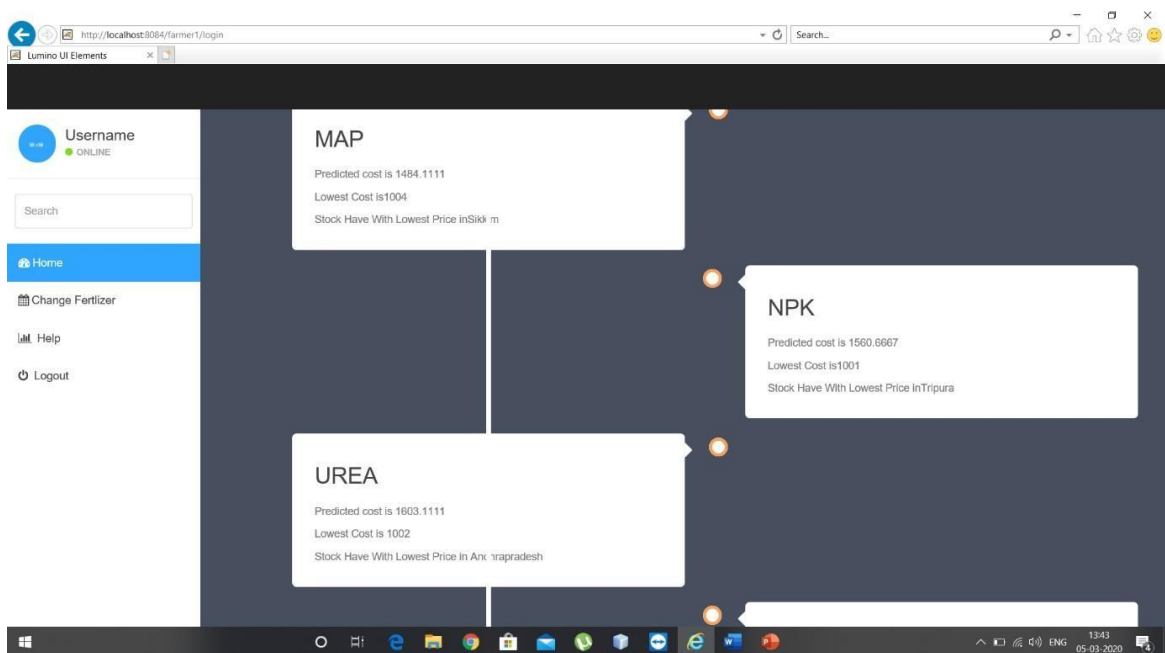
SCREENSHOT 1:



SCREENSHOT 2:



SCREENSHOT 3:



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Submission date: 06-May-2020 09:35AM (UTC-0400)

Submission ID: 1317501761

File name: p1_1.pdf (317.99K)

Word count: 2270

Character count: 12641

Identification of possibilities for crop growth

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Abstract:

Manure esteem updation has a positive reasonable criticalness for controlling agrarian creation and for informing the adjustment in advertise pace of compost to the rancher. Right now information examination innovation is utilized to refresh the rate change through notice. The warnings are send promptly when the pace of the manure is changed in the market. Various kinds of land condition. So the nature of the manures are recognized utilizing positioning procedure. By this procedure the pace of the low quality and top notch manure is additionally informed. The use of troupe of classifiers clears a way approach to settle on a superior choice on forecasts because of the utilization of different classifiers. SVM and Bayes of Naive algorithms used in this application. Further, a positioning procedure is applied for dynamic so as to choose the classifiers results. This framework is utilized to foresee the expense of the composts for additional.

Keywords : Support Vector Machine(SVM), Navie Bayes, Message passing, Classified result

INTRODUCTION :

In the world of developing technologies, the success of sharing information will help the agriculturists in realizing and developing their potential. The information sharing is that the valuable and well timed statistics is being shared among agriculturists, both formally or informally. The willingness of records sharing refers back to the open mind-set amongst agriculturists. This open mindset determines the diploma and scope of statistics sharing. Using web-technologies like html and css we build the web application, We create dataset by gathering data from multiple resources and place them in place which is used to predict the price of the fertilizers and results are subjected to non-linear test later priorities are set and rankings are given to the list of fertilizers. Place

information in our application and share that information to agriculturists whose data is collected and stored in the my sql server. we software to automatically send the updated information to the agriculturists in the form of text message.so that agriculturists no need to go to near by towns and cities to know the updated informationWe can be device studying algorithms to predict the fee of the fertilizers for the subsequent months. For prediction cause we are able to be the use of Support vector system(SVM), Baye's of Naive (NB) and K-Nearest Neighbor(K-Nearest Neighbor) algorithms to predict the cost of the fertilizers for the further usage of the agriculturists. Further, a ranking process is applied for decision making in order to select the classifiers results.

Data set assortment from different sources. Data parsing and purging method is applied to make the crude information into preparing information. The information gathered is liable to AI framework alongside run time examination makes an effective manure esteem updation framework. Ranking strategy utilized in the venture causes us to settle on productive choices. Creating a web application for client enlistments and assortment of information. Usage of programming recommends the clients in SMS design.

Literature Review :

In 2018, [1] Jethva .M , have overview records strategies fertilizing advice, To keep up sustenance levels in the dirt if there should arise an occurrence of insufficiency, manures are added to soil. The standard issue existing among the Indian agriculturists pick rough measure of composts and include them physically. Overabundance or lacking expansion of composts can hurt the plants life and diminish the yield..

In 2015, [2] M.C.S.Geetha had proposed horticulture is the maximum fundamental software place particularly within the countries such as India. Utilize data innovation in agribusiness can alternate the situation of dynamic and ranchers can yield in higher manner. Information mining assumes significant task in dynamic on some viewpoints with horticulture subject. It inspects approximately job of statistics mining within the cultivating area and their associated work with the aid of more than one creators in recognized with agribusiness vicinity.

In 2016, [3] S. Srija, R. had proposed this paper imparts the thought with respect to the creation of AgroNutri an android application that helps in passing on the gather specific manure add up to be applied. The

thought is to figure the proportion of NPK manures to be applied rely upon the blanked proposition of the harvest of intrigue. This application works rely upon the item picked by the rancher and that is taken as information, hence giving the ranchers. The future extent of the AgroNutri is that GPRS can be incorporated so that as indicated by area supplements are proposed.

In 2016, [4] Karandeep Kaur have proposed machine learning: applications in indian agriculture, Horticulture is a field that has been missing from adaption of innovations and their headways. Indian agriculturists ought to be sufficient with the general systems. AI is a local idea that can be applied to each field on all information sources and yields. It has adequately settled its capacity over standard counts of programming building and estimations.

In 2011, [5] Schneider had proposed Impacts of populace development, monetary advancement, and specialized change on worldwide nourishment creation and consumption. All through the next a long time humankind will call for extra nourishment from less land and water assets.

In 2014, [6] J. Meng proposed the position of small- scale circle of relatives farms in improvement is the situation of lengthy-standing debate. Despite predictions on the likely evolution of small farms, as city and commercial sectors account for larger shares of financial hobby, the agricultural landscape within the growing world remains ruled through family-operated smallholding.

In 2012, [7] Kaloxylou A , One hundred thirty-one hundred forty four .The objective of the system is to digitalize the procedure of cultivation of crops in terrace through organic approach. This mobile app will be used by garden enthusiasts, health freaks and many urban and sub urban people. The “Organic Terrace” app consists of main page which displays the number of buttons which serve different purpose like guiding information, expert advice link, setting up of notification.

In 2014, [8] Li .Yu ., Rui .,Miao . Li .Y .S have proposed Elements affect farmers’ adoption of recent era primarily based on Logistic-ISM version-a case take a look at of potato planting technology in Dingxi City, Gansu Province,” Progress in Geography, 33 vol. , no Four, pp.542-551.The advancements in era should be worked upon across various disciplines and it has already proven dramatic enhancements in lots of fields.

In 2018, [9] Y. Wang have proposed A neural community adaptive manage based totally on speedy getting to know approach together with software,” Advances In Modeling and Analysis, Vol. Forty six(three), pp. 27-34,1994.

METHODOLOGY :

In proposed framework, the information examination innovation is utilized to refresh the rate change through notice. The notices are send quickly when the pace of the compost is changed in the market. Various kinds of land condition. So the nature of the composts are recognized utilizing positioning procedure. By this procedure the pace of the low quality and excellent compost is likewise informed. The utilization of

troupe of classifiers clears a way approach to settle on a superior choice on forecasts because of the use of various classifiers. Further, a positioning procedure is applied for dynamic so as to choose the classifiers results. This framework is utilized to foresee the expense of the composts for additional. This undertaking utilizes Ensemble of classifiers, for example, SVM, NAÏVE BAYES, KNN or cross breed classifier. Also, this undertaking utilizes Ranking strategy. The points of interest of proposed systems are useful to individuals far away from towns/urban communities, time productivity Reduction of rehashed work. The Points of interest of proposed systems are useful to individuals far away from towns/urban communities, time productivity and Reduction of rehashed work.

SYSTEM ARCHITECTURE

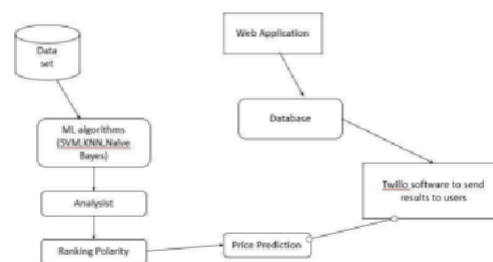


Fig.1 SYSTEM ARCHITECTURE

Calculate Fertilizer Value

In this project, Fertilizer value calculated by quality of the fertilizers are identified using ranking process. By this process the rate of the low quality and high quality fertilizer is also notified.

SMS send to farmers

In this project the data analysis technology is used to update the rate change through notification. The notifications are send immediately when the rate of the fertilizer is changed in the market. Different types of land condition.

K-N EAREST NEIGHBOR (KNN)

CLASSIFICATION METHOD

K-Nearest Neighbor is a form of example-based learning, or lazy learning, where the locally approximated characteristic is most useful and the calculations are postponed before classification. The K-Nearest Neighbor set of rules is probably the easiest of all machine learning algorithms to gain algorithm knowledge. The neighbors are taken from a whole lot of things for which the calculation of beauty (for k-Nearest Neighbor arrangement) or items belonging estimation (for k-Nearest Neighbor reoccurrence) is understood

ALGORITHM OF NAIVE BAYES

In easy phrase, a classifier of Naive Bayes assumes that the existence of a certain attribute in a class is unrelated to the existence of other attribute. For example, whether it's miles crimson, round, and around three inches in diameter, a fruit maybe considered to be an apple. Even if those functions depend on each other or on the lifestyles of the other features, all these residences contribute independently to the chance that this fruit is an apple, and that's why it is called 'Naive'. The version of Naive Bayes is simple to construct, and especially useful for units of extremely large data. Naive Bayes is believed to outperform even incredibly sophisticated classification techniques alongside simplicity. Bayes theorem offers a means of estimating future incentives.

This open disposition decides the degree and extent of data sharing. Huge information investigation innovation can adequately improve the exhibition of compost esteem updation. This venture proposes a

novel canny framework for rural manure value forecast dependent on compost cost. The key thought is to utilize outfit of classifiers for expectation. The use of group of classifiers clears a way approach to settle on a superior choice on forecasts because of the use of different classifiers.

Results :

An important problem for agricultural planning purposes is the exact calculation of yields for the various crops involved in the planning. Gaining knowledge of (ML) is a critical approach for achieving sensible and effective answers to this problem. There have been several comparisons of ML approaches for yield prediction, finding the most accurate approach. Generally speaking the broad variety of measured vegetation and techniques is too small and no longer offers adequate evidence for the functions of agricultural planning.



Conclusion:

This assignment proposes a singular clever gadget for agricultural fertilizer fee prediction primarily based on fertilizer price. The key concept is to apply ensemble of classifiers for prediction. The key concept is to apply ensemble of classifiers for prediction. The usage of ensemble of classifiers paves a route manner to make a better choice on predictions because of the use

of more than one classifiers. Further, a ranking procedure is implemented to reserve in making of selection pick out the classifiers consequences. This device is used to predict the fee of the fertilizers for similarly.

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