ESTIMATE THE CROP YIELD USING DATA ANALYTICS

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Senthil Kumar P
Vijayakumar A

CHAPTER -1

1.INTRODUCTION

Project Overview:

Agriculture is important for human survival because it serves the basic need. Due to variations in climatic conditions, there exist bottlenecks for increasing the crop production in India. Various factors are to be considered which have direct impact on the production, productivity of the crops. Crop yield prediction is one of the important factors in agriculture practices. The use of technology in agriculture has increased in recent year and data analytics is one such trend that has penetrated into the agriculture field. The present study gives insights on various data analytics methods applied to crop yield prediction. Agriculture forms the basis for food security and hence it is important. In India, majority of the population i.e., above 55% is dependent on agriculture as per the recent information. Agriculture is the field that enables the farmers to grow ideal crops in accordance with the environmental balance. In India, wheat and rice are the major grown crops along with sugarcane, potatoes, oil seeds etc. Farmers also grow non-food items like rubber, cotton, jute etc. More than 70% of the household in the rural area depend on agriculture. This domain provides employment to more than 60% of the total population and has a contribution to GDP also. In the farm output, India ranks second considering the world wide scenario. This is the widest economic sector and has an important role regarding the framework of socio-economic fabric of India. Farming depends on various factors like climate and economic factors like temperature, irrigation, cultivation, soil, rain fall, pesticide and fertilizers. Historical information regarding crop yield provides major input for companies engaged in this domain. These companies make use of agriculture products as raw materials, animal feed, paper production and so on. The estimation of production of crop helps these companies in planning supply

chain decision like production scheduling. The industries such as fertilizers, seed, agrochemicals and agricultural machinery plan production and activities like marketing based on the estimates of crop yield. Farmers experience was the only way for prediction of crop yield in the past days. Technology penetration into agriculture field has led to automation of the activities like yield estimation, crop health monitoring etc.

Purpose:

In India crop yield is season dependent and majorly influenced by the biological and economic causes of an individual crop. Reporting of progressive agricultural yield in all the seasons is an ample task and an advantageous task for every nation with respect to assesses the overall crop yield prediction and estimation. At present a common issue worldwide is, farmers are stressed in producing higher crop yield due to the influence of unpredictable climatic changes and significant reduction of water resource worldwide. A study was carried out to collect the data on world climatic changes and the available water resources which can be used to encourage advanced and novel approaches such as big data analytics to retrieve the information of the previous results to the crop yield prediction and estimation. Study imported that the selection and usage of the most desirable crop according to the existing conditions, support to achieve the higher and enhanced crop yield. The accurate prediction of crop yield certainly benefits the farmers in choosing the right method to reduce the crop damage and gets best prices for their crops. A research group conducted a work with an objective of accurate prediction of crop yield through big data analytics to assess various crop yield influencing factors such as Area under Cultivation interims of hectors, Annual Rainfall rates and Food Price Index and to develop relationship among these parameters. Regression Analysis methodology was applied to examine the selected factors and their impact on crop prediction and final yield. RA methodology is a multivariable investigation practice which can categorize the factors in to groups such as explanatory and response variables and helps to assess their interaction to obtain a resolution. All the selected factors of the present study design known as AR, AUC and FPI were measured for a period of 10years between the years 1990-2000. A novel method called Linear Regression is applied to analyze the relationship between explanatory variables and the crop yield considered as response variable. Study reported that the R2 value for the studied factors clearly indicate that crop yield is principally depends on AR. Study also reported that the other two factors screened were also found to have significant impact after the AR. Study shall be continued to analyze the impact of for other substantial factors like Minimum Support Price, Cost Price

Index, Wholesale Price Index etc. and their relationship on the yields of different crops. Crop yield gaps, measured as difference between expected yields based on the potency and actual farm yield received. In order to achieve the higher crop yield, farmers must need to tackle the influencing factors such as influence of change in climate conditions on the prospects of crop yields, and change in the usage of agricultural land to assess and ultimately reduce the crop yield gaps. Several researchers reported the applications of bio simulation models to estimate the crop yield gaps in the last decade. The impact of the crop yield gaps assessment studies conducted through bio simulation based methodologies were negatively influenced by quality and resolution of climate and soil data, as well as unscientifically expectations about crop yield prediction systems and crop yield assessment modeling designs calibration method. An explicit rationale model which can effectively applied at various levels of the availability of quality information for identifying data sources to analyze crop yield and measuring yield gaps at definite geographical locations and works based on the rise in titer approach. The model is highly helpful in retrieving the useful data from the available, poor quality, less rigorous data sources or if the data is not available. A case study was discuss don the application of selected model design to quantify the yield gaps of maize crop in the state of Nebraska, and also at the different geographical locations representing the nations Argentina and Kenya a tnational scale level. Different geographical locations such as Nebraska, Argentina and Kenya were identified to symbolize the distinct scenarios of Agri based data availability and the quality for the selected variables assessed to predict and estimate the crop yield gaps. The definitive aspiration of the planned method is to afford transparent, easily accessible, reproducible and technically sound and strong guide lines for predicting the yield gaps. The proposed guidelines were also relevant for understanding and to simulate the influence of change in climate conditions and usage of cultivable land changes from national to global scales.

CHAPTER - 2

2. LITERATURE SURVEY

Existing problem

At present we are at the immense need of another Green revolution to supply the food demand of growing population. With the decrease of available cultivable land globally and the decreased cultivable water resources, it is almost

impossible to report higher crop yield. Agricultural based big data analytics is one approach, believed to have a significant role and positive impact on the increase of crop yield by providing the optimum condition for the plant growth and decreasing the yield gaps and the crop damage and wastage. With this aim the present paper reviews about the various advances, design models, software tools and algorithms applied in the prediction assessment and estimation of the crop yield. India is basically agriculture based country and approximately 70% our country economics is directly or indirectly related to the agricultural crops. The principle crop which occupies the highest (60-70%) percentage of cultivable land in the Indian soil is the paddy culture and it is the major crop especially in central and south parts of the India. Rice crop cultivation plays an imperative part in sustenance security of India, contributing over 40% to general yield generation. The enhanced yield of the rice crop depends largely on the water availability and climatic conditions. For example, low precipitation or temperature extremes can drastically diminish rice yield. Growing better strategies to foresee yield efficiency in a mixture of climatic conditions can help to understand the role of different principle factors that influence the rice crop yield. Big data analytic methods related to the rice crop yield prediction and estimation will certainly support the farmers to understand the optimum condition of the significant factors for the rice crop yield, hence can achieve higher crop yield.

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Problem Statement Definition:

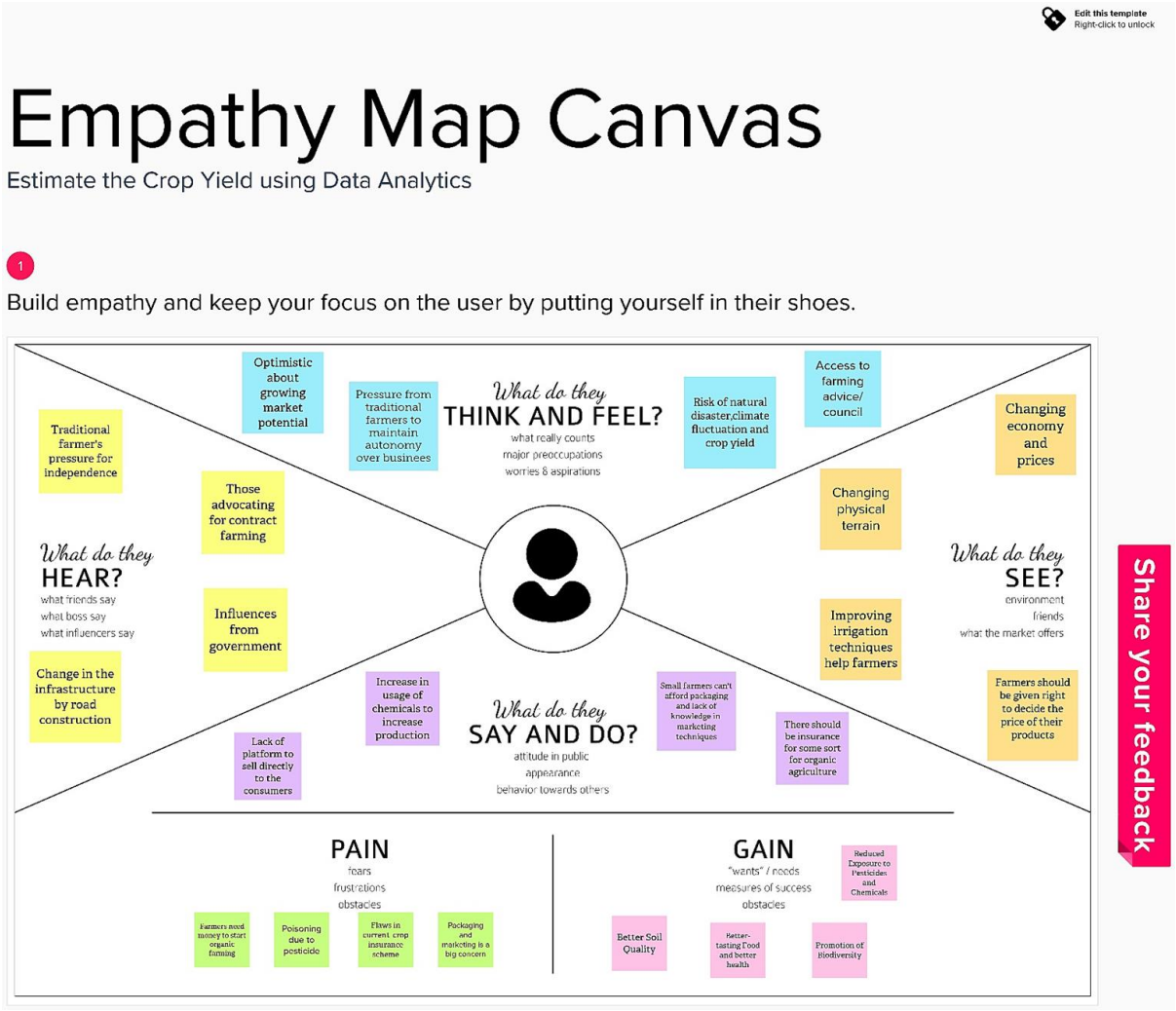
Analyzing the yields of crop is necessary to update the policies to ensure food security. A research group conducted a study with the aim in suggesting a novel data mining method to predict the yields of crop depends on agricultural big data analytics methodologies, which were progressively contrast with conventional data mining methodologies in the process of handling data and modelling designs. Study suggested that the method employed should be user friendly, work based on progressive big-data responsive processing structure, supposed to utilize the existing agricultural based significant datasets and would still be used with the larger volumes of data growing at enormous rates. Nearest

neighbours modelling is one such novel data mining technique which works on the results collected based on data processing structures form the farmers and suggest a well unbiased result on the base of accuracy and prediction time in advance. Simulation models based on field experiment are valuable technologies for studying and understanding crop yield gaps, but one of the critical challenge remain with these methods is scaling up of these approach to assess the data collated between different time intervals from the broader geographical regions. Satellite retrieved data have frequently been revealed to present data sets that, by itself or in grouping with other information and model designs, can precisely determine the yields of crop in agricultural lands. The yield maps developed shall provide an unique opportunity to overcome both spatial and temporal based scaling up challenges and thus improve the ideology of crop yield gaps prediction. A review was conducted to discuss the applications of remote sensing technology to determine the impact and causes of yield gaps. Even though the example discussed by the research group demonstrates the usefulness of remote sensing in the prediction of yield gaps, but also many areas of possible application with respect to the crop yield assessment, prediction and improvement remain unexplored. Study proposed two less complicated, easily assessable methods to determine and quantify the yield gaps between various agricultural fields. First method works closely with the constructive maps representing the average crop yields, it can be used directly to accesses specific crop yield influencing factors for further studies whereas the second method use the remote sensing technology to retrieve the data for providing the useful information regarding the crop yield prediction and estimation.

CHAPTER - 3

3.IDEATION & PROPOSED SOLUTION

Empathy Map Canvas:



Ideation & Brainstorming:

In coming decades, two most significant and important factors found to influence crop yield is, increase in the global population and economy, which greatly demands the higher and sustainable agricultural based crop yields. The capacities of food production at global level is going to be very limited due to the less availability of cultivable land, water resources, difficulties in maintaining the sustainable crop production levels, effects of changes in the global climatic conditions and also by various biophysical parameters which influence the crop yield. The farmers need to be educated on the application of scientifically proven methods to quantify the crop yield capacities and same need to be informed to higher authorities to maintain transparency in sharing the actual information, intern helps in making the policy based, research oriented, development and investment related decisions that aim to influence future crop yield. Crop production abilities and yield gaps can be assessed and measured by comparing the possible yields at normal conditions with respect to the crop production under, respectively, irrigated and rain fed conditions by keeping the crop yield levels

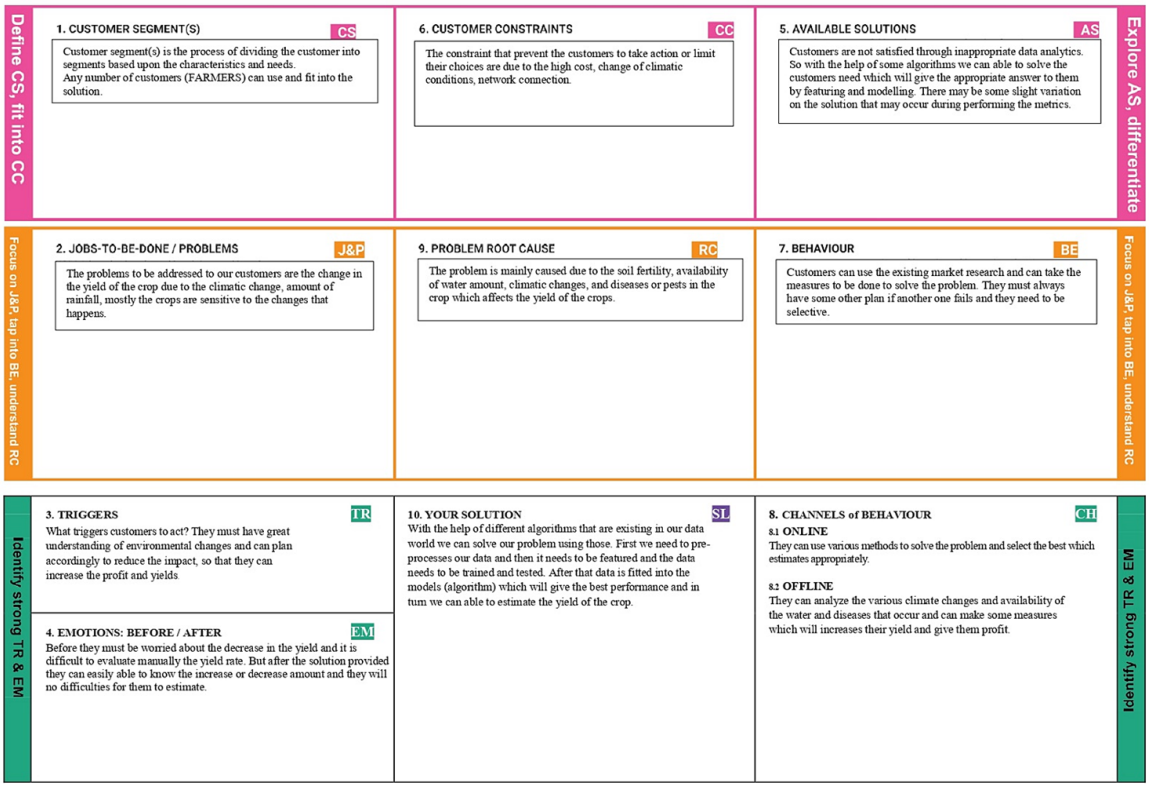
limited by the less availability of the water as benchmarks. Yield gaps can be defined as the difference between the expected crop yields with respect to the actual crop yield and accurate, spatially unambiguous awareness and information about the yield gaps is necessary to achieve sustainable amplification of agricultural yields. Keeping an aim of discussing the impact of the various methods practiced in measuring the yield gaps with a spotlight on the local-to-global importance of outcomes, a research group carried out a survey on the various methods applied to estimate yield gaps. Study reported few standard operation methods, employed in quantifying the crop yield potential on the data collected from the farmers of western Kenya, Nebraska and Victoria. Study recommended for the use of accurate and recent yield data assessed through calibrated crop model designs and further upscaling validated methods in the prediction of crop yield gaps The bottom-up application of this global protocol allows verification of estimated yield gaps with on-farm data and experiments.

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement(Problem to be solved)	In this project using visualization techniques we create a dashboard which provides insights of Crop production using the statistical report by dataanalysis.
2.	Idea/Solution description	Before the farmer sow the seeds he must have complete information above thesoil, climate, water supply, variety ofseeds,fertilizers used and various external factors. And we use big data in agriculture to improve data analyticseffectively.

3.	Novelty/Uniqueness	Farmer must estimate the crop yield at early stages of the work with greater accuracy. We can also improve chain productivity, transparency and efficiency for key commodities.
4.	Social Impact/CustomerSatisfaction	Farmers can easily understand about the crop yields in India.Customer can easily understand crop production in graphical view.The farmers will be able to yield the specific crop for the specific season.
5.	Business Model(Revenue Model)	Production resources, agricultural commodities and facilitative services can be improved.We can calculate short term and long term economic potential, viability and future opportunities of chosen commodities.

Problem Solution Fit:



CHAPTER - 4

4.REQUIREMENT ANALYSIS

Functional requirement

Following are the functional requirements of the proposed solution.

FRNo.	FunctionalRequirement(Epic)	SubRequirement(Story/Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Profile Updation	Updation of user’s details
FR-4	User Login Credentials	Login with username and password
FR-5	User Dashboard	Take the data given by user and interactive dashboard can be created.

FR-6	AnalysisandEstimation	Analyse the yield of crop from the data and estimate the crop yield using the Data Driven Approach. I.e.Cognos Analytics with Watson.

Non-functionalRequirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	All the data which is needed will be displayed in onewhich is easily understandable and will be useful foruser to enhance the crop yield with higher accuracy and also they can get the insights of crop production.
NFR-2	**Security**	Only recognized users can access the resource.
NFR-3	**Reliability**	A new Visualization and dashboard that is added or erased it won't affect other dashboards.
NFR-4	**Performance**	Data analytics helps in executing the existing algorithms faster with large datasets. Therefore, it will be helpful to farmers, Investors, Land owners and Business persons to gain profit in yield.
NFR-5	**Availability**	By using the technique of Precision farming, resource allocation can be made to make resources available.

CHAPTER - 5

5.Project Design

Data Flow Diagram

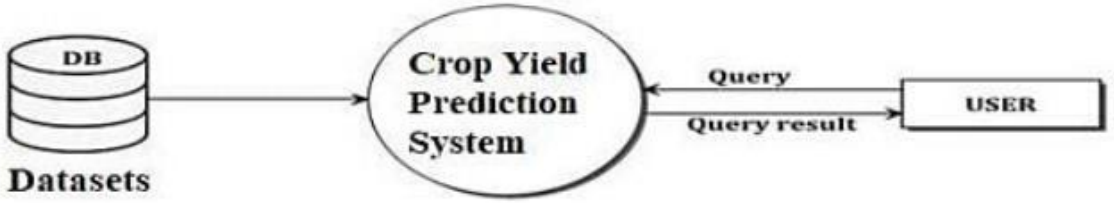


Fig.5.1.1 DFD Level 0

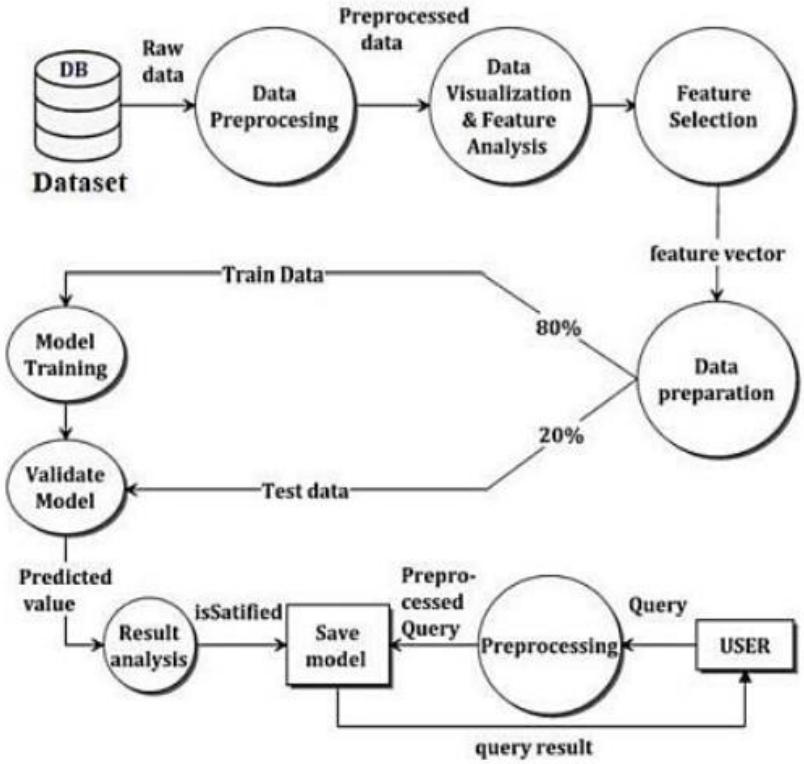


Fig.5.1.2 DFD Level 1

Solution & Technical Architecture:

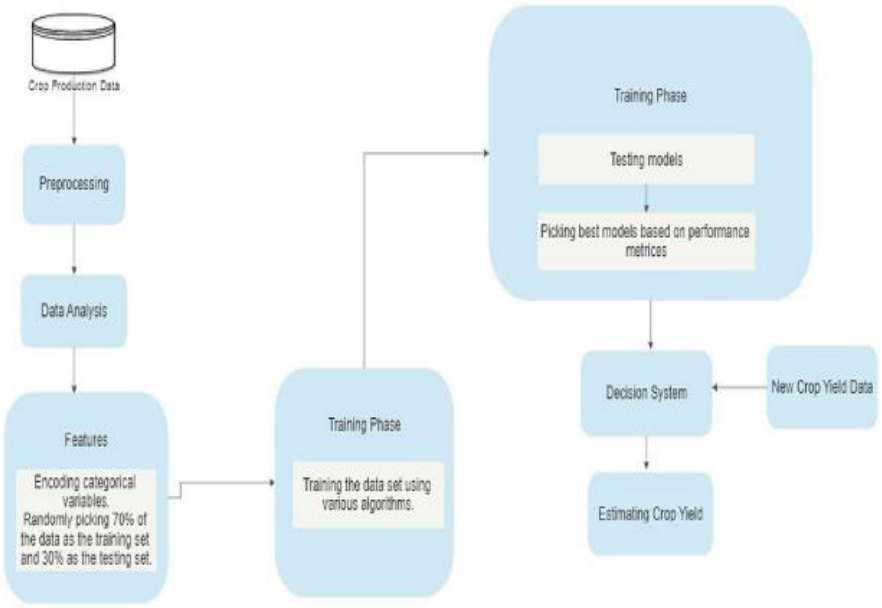


Fig.5.2.1 Solution Architecture Diagram

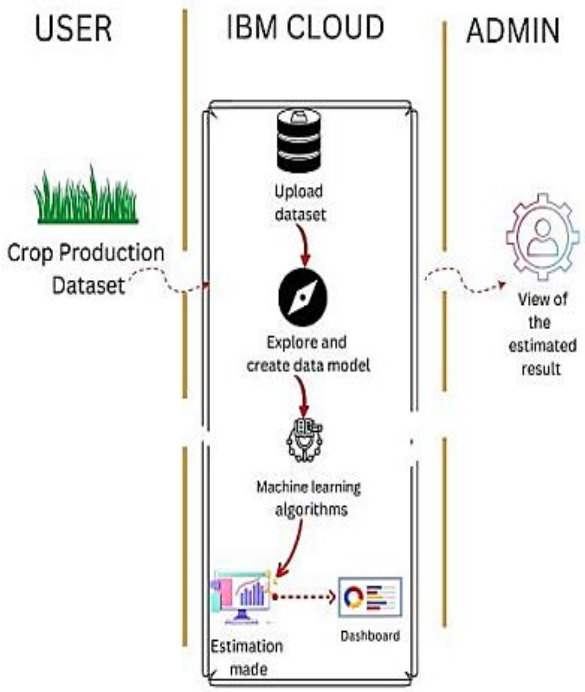


Fig.5.2.2 Technology Architecture Diagram

User Stories:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Tester	Domain Expertise	USN-1	The data set is pre processed and trained	Introduction and data Processing	High	Sprint 1
		USN-2	Login Page is created for user interaction	Login page	High	Sprint 2
Developer	Data analysis tools	USN-3	The data set is classified and modelled using various tools	Data Modelling	High	Sprint 3
End User	Data visualization tools	USN-4	The output is analysed using big data tools and the outcome is visualized	Data Visualization	High	Sprint 4

CHAPTER - 6

6.PROJECT PLANNING & SCHEDULING

Sprint Planning & Estimation

	(Epic)	Number		Points		
Sprint-1	Registration	USN-1	As a user, I can register for by entering my Agri - id card and request..	2	High	Esai Selvan J Senthil Kumar P Ahamed Riyas I Vijayakumar A Abdul Rahuman S
		USN-3	As a user, I can register for the application through Gmail	2	Medium	Esai Selvan J Senthil Kumar P
	Login	USN-4	As a user, I can Call and request or Approach for dataset	4	High	Ahamed Riyas I Abdul Rahuman S Vijayakumar A
	Working with the Dataset	USN-5	To work on the given dataset, Understand the Dataset.	2	High	Esai Selvan J Senthil Kumar P Ahamed Riyas I Abdul Rahuman S Vijayakumar A
		USN-6	Load the dataset to Cloud platform then Build the required Visualizations.	10	High	Esai Selvan J Senthil Kumar P
Sprint-2	Data Visualization Chart	USN-7	Using the Crop production in Indian dataset, create various graphs and charts to highlight the insights and visualizations. *Build a Visualization to showcase Average Crop Production by Seasons.	4	Medium	Ahamed Riyas I Abdul Rahuman S Vijayakumar A
			*Showcase the Yearly usage of Area in Crop Production.	4	Medium	Senthil Kumar P Esai Selvan J

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
			Build a visualization to show case top 10 States in Crop Yield Production by Area.	4	Medium	Ahamed Riyas I Abdul Rahuman S Vijayakumar A
			Build the required Visualization to showcase the Crop Production by State.	4	Medium	Esai Selvan J Senthil Kumar P
			Build Visual analytics to represent the Sates with Seasonal Crop Production using a Text representation.	4	Medium	Ahamed Riyas I Abdul Rahuman S Vijayakumar A
Sprint-3	Creating The dashboard	USN-8	Create the Dashboard by using the created visualizations.	20	High	Esai Selvan J Senthil Kumar P
Sprint-4	Export The Analytics	USN-9	Export the created Dashboard	20	High	Ahamed Riyas I Abdul Rahuman S Vijayakumar A

Sprint Delivery Schedule:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	5 Days	24 Oct 2022	28 Oct 2022	20	29 Oct 2022
Sprint-2	20	5 Days	31 Oct 2022	04 Nov 2022	20	05 Nov 2022
Sprint-3	20	5 Days	07 Nov 2022	11 Nov 2022	20	12 Nov 2022
Sprint-4	20	5 Days	14 Nov 2022	18 Nov 2022	20	19 Nov 2022

CHAPTER - 7

7. TESTING

Test Cases

Testcase 1: Logging in with registered login details.

Testcase 2: Registering with existing user's details.

Testcase 3: Producing visualisations for given input.

User Acceptance Testing

Purpose of Document:

The purpose of this document is to briefly explain the test coverage and open issues of Estimate the Crop Yield Using Data Analytics project at the time of the release to User Acceptance Testing (UAT).

Defect Analysis:

This report shows the number of resolved or closed bugs at each security level, and how they were resolved.

Resolution	Severity 1	Severity 2	Severity 2	Severity 4	Subtotal
ByDesign	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Totals	24	9	11	25	69

Test Case Analysis:

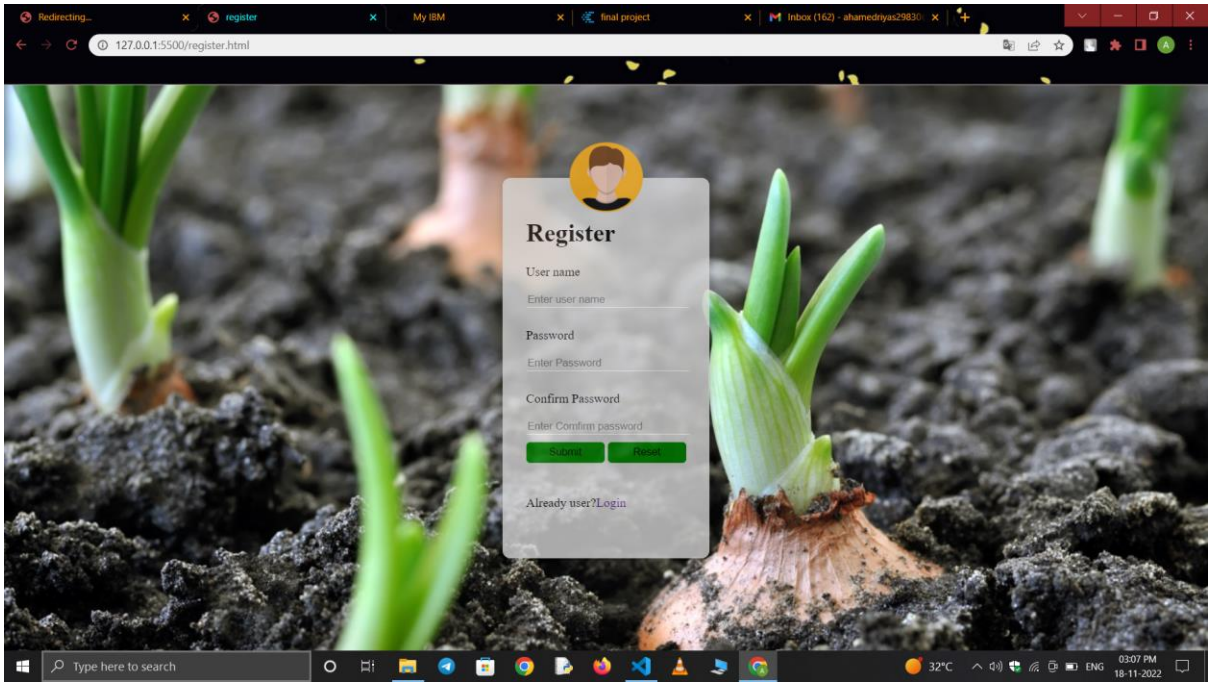
This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	51	0	0	51
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9

Final Report Output	4	0	0	4
Version Control	2	0	0	2

CHAPTER-8

8.RESULTS
Performance Metrics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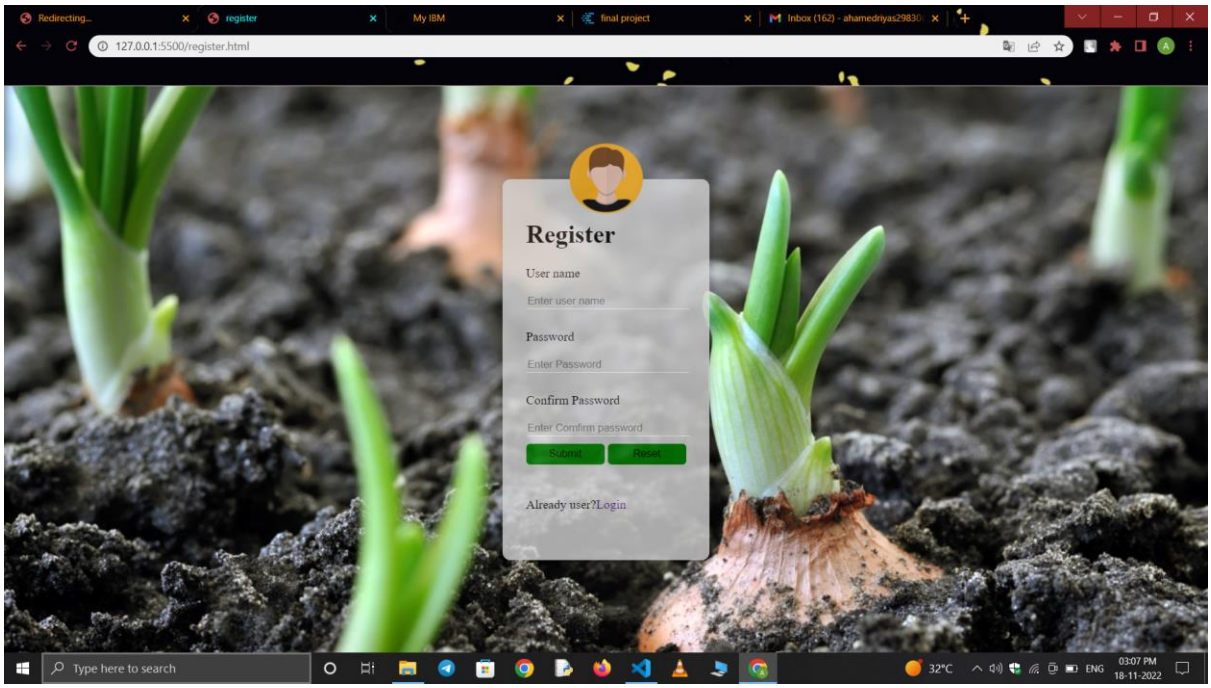
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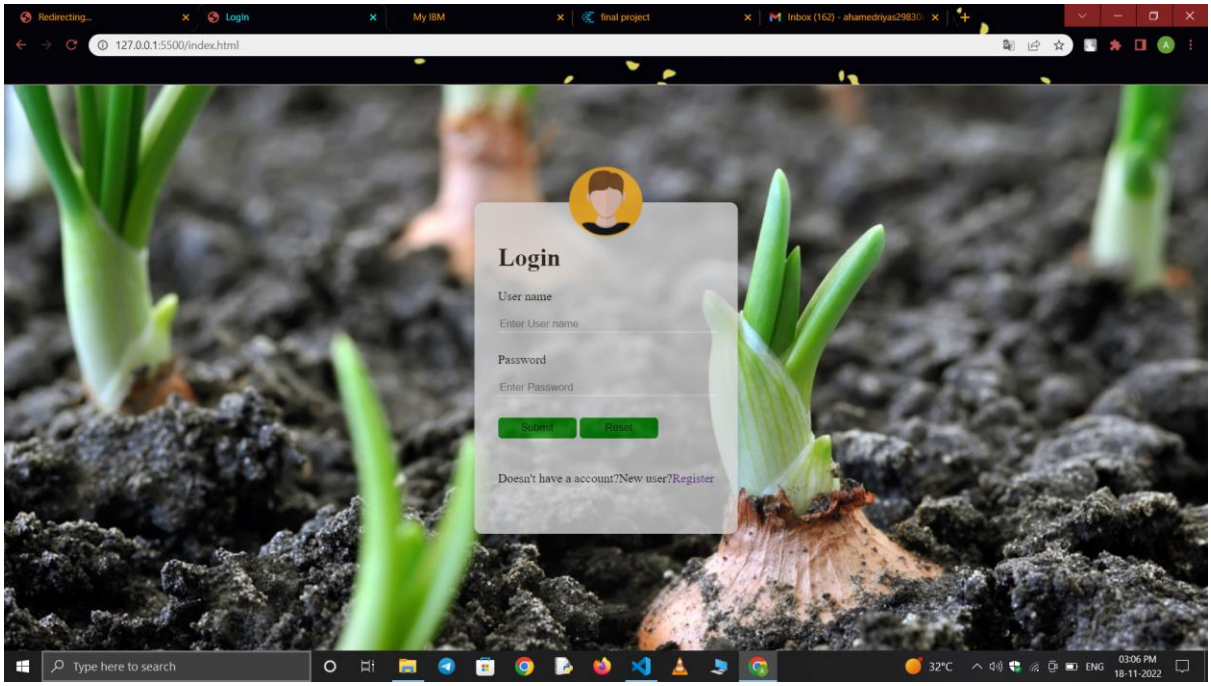
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Login
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Password
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Reset
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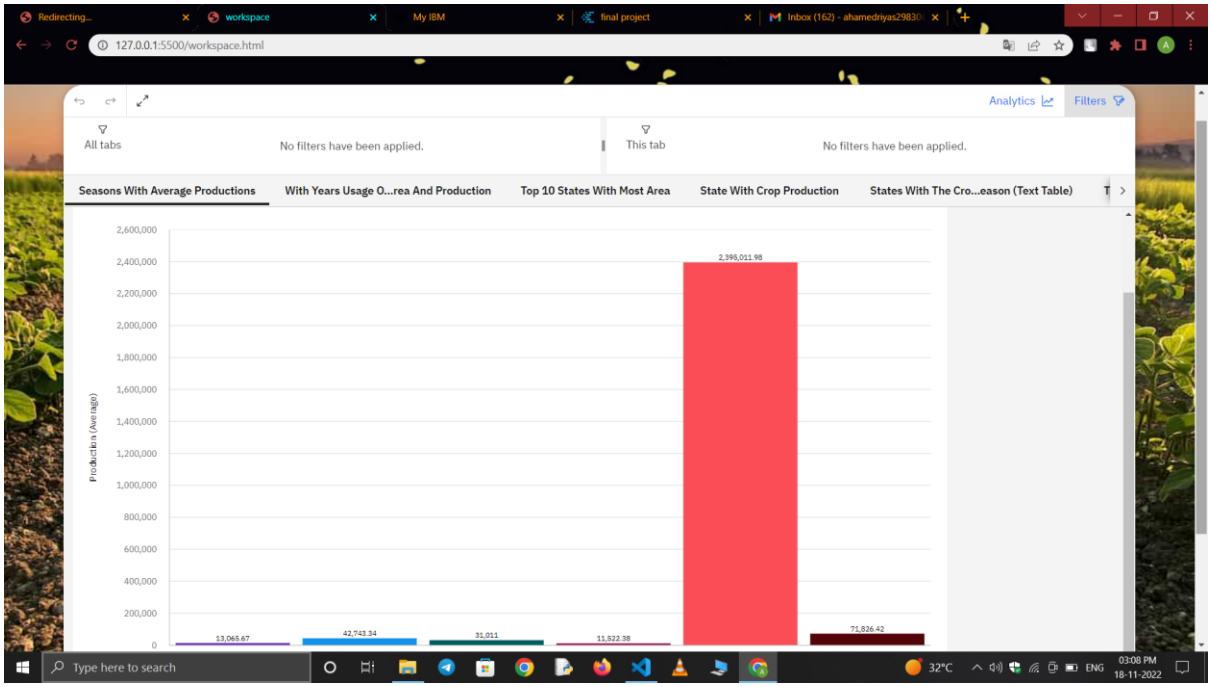
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Seasons With Average Productions
With Years Usage O...rea And Production
Top 10 States With Most Area
State With Crop Production
States With The Cro...eason (Text Table)
Production (Average)
2,600,000
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1,600,000
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1,200,000
1,000,000
800,000
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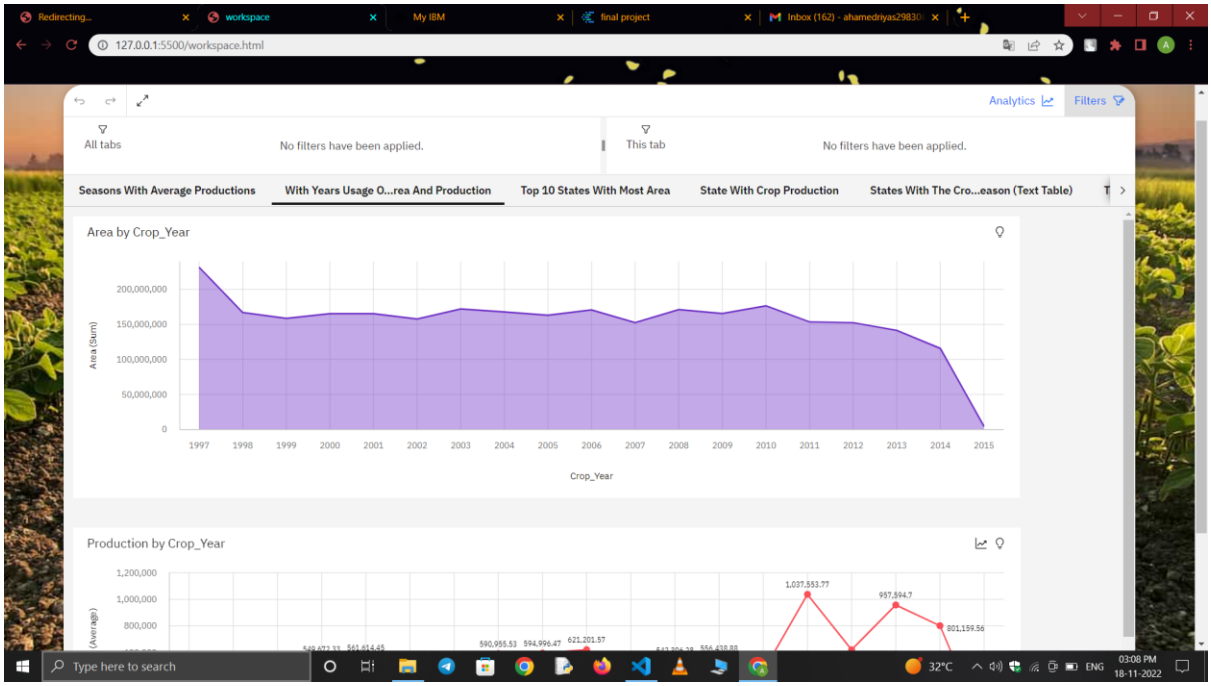
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Seasons With Average Productions
With Years Usage O...rea And Production
Top 10 States With Most Area
State With Crop Production
States With The Cro...eason (Text Table)
Area by Crop_Year
Area (Sum)
200,000,000
150,000,000
100,000,000
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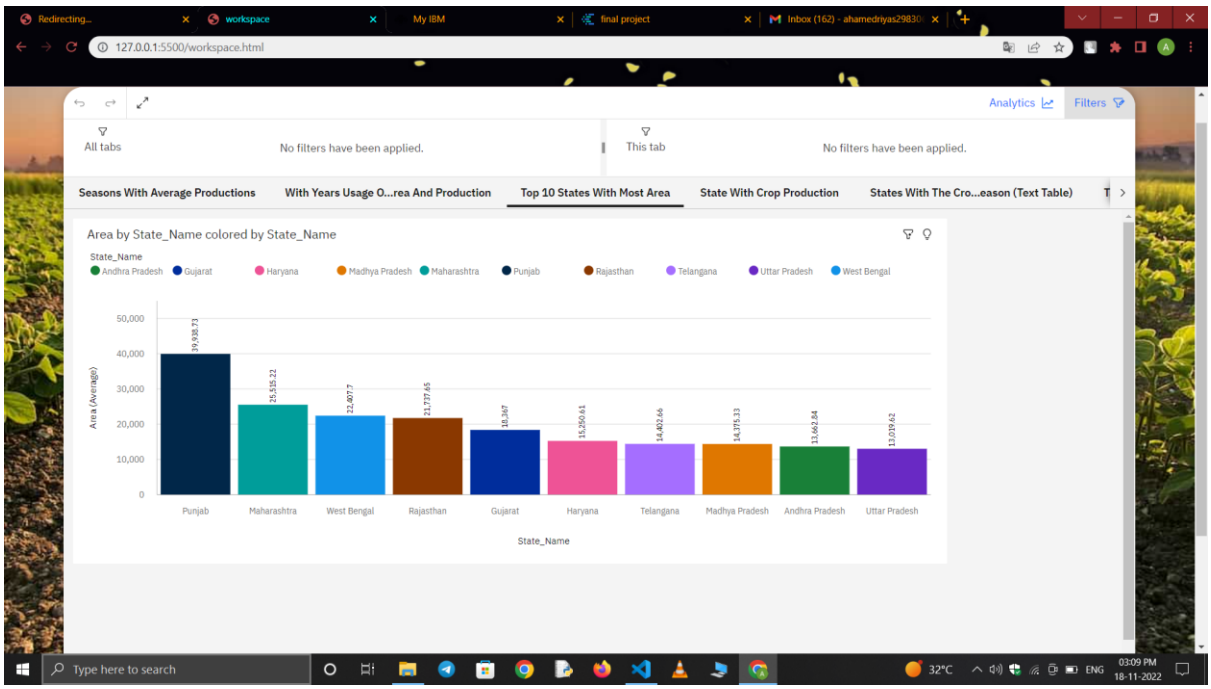
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No filters have been applied.
Seasons With Average Productions
With Years Usage O...rea And Production
Top 10 States With Most Area
State With Crop Production
States With The Cro...eason (Text Table)
Area by State_Name colored by State_Name
State_Name
Andhra Pradesh
Gujarat
Haryana
Madhya Pradesh
Maharashtra
Punjab
Rajasthan
Telangana
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West Bengal
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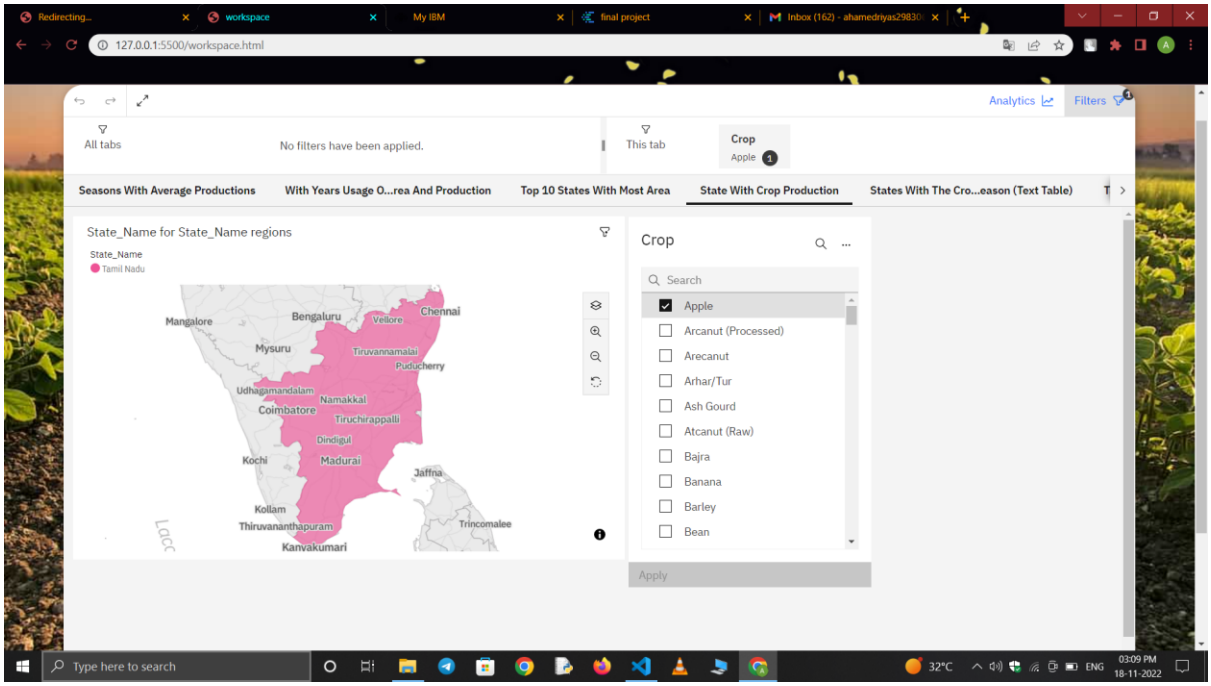
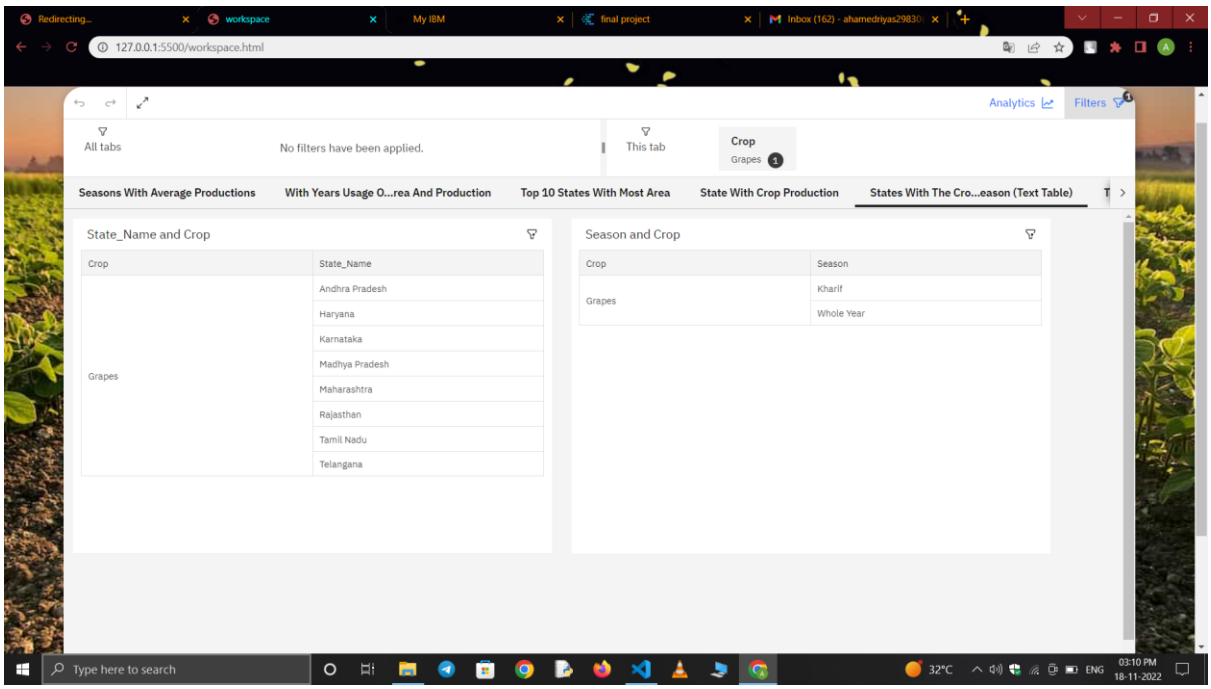
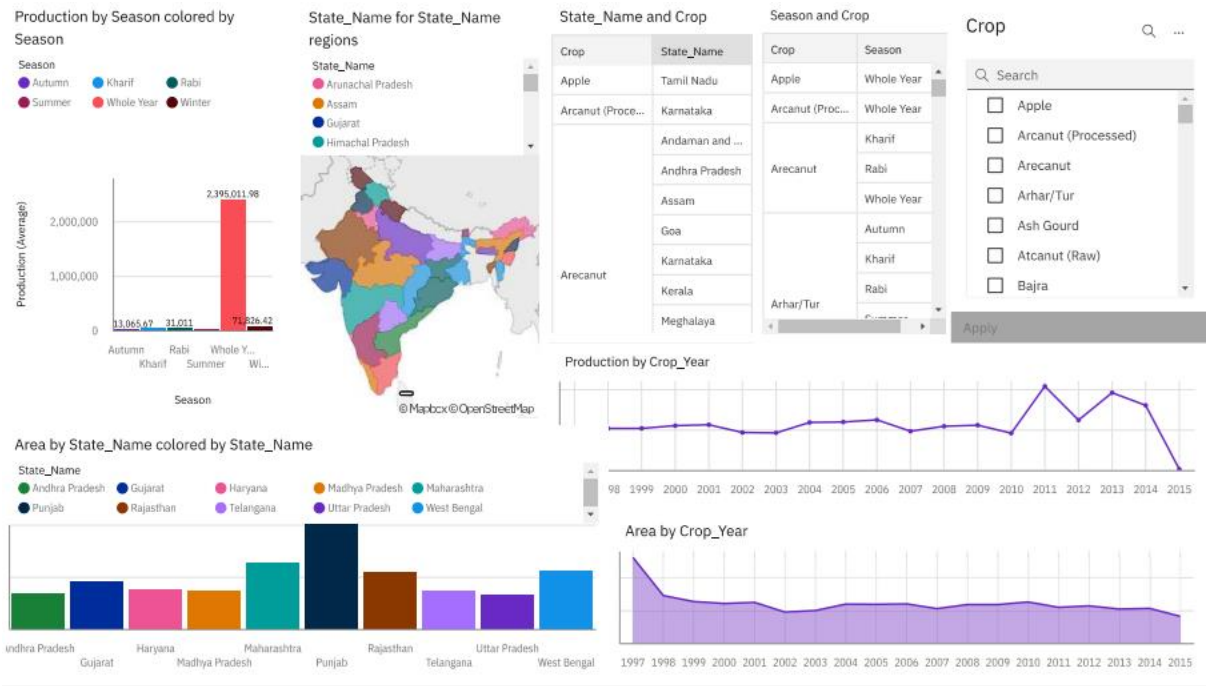
14,375.33
13,662.84
13,019.62
Punjab
Maharashtra
West Bengal
Rajasthan
Gujarat
Haryana
Telangana
Madhya Pradesh
Andhra Pradesh
Uttar Pradesh
State_Name
Type here to search
32°C
ENG
03:09 PM
18-11-2022


Redirecting...
workspace
My IBM
final project
Inbox (162) - ahamedriyas29830
127.0.0.1:5500/workspace.html
Analytics
Filters
All tabs
No filters have been applied.
This tab
Crop
Apple 1
Seasons With Average Productions
With Years Usage O...rea And Production
Top 10 States With Most Area
State With Crop Production
States With The Cro...eason (Text Table)
State_Name for State_Name regions
State_Name
Tamil Nadu
Mangalore
Bengaluru
Vellore
Chennai
Mysuru
Tiruvannamalai
Puducherry
Udhagamandalam
Namakkal
Coimbatore
Tiruchirappalli
Dindigul
Kochi
Madurai
Jaffna
Kollam
Thiruvananthapuram
Trincomalee
Kanyakumari
Crop
Search
Apple
Arcanut (Processed)
Arecanut
Arhar/Tur
Ash Gourd
Atcanut (Raw)
Bajra
Banana
Barley
Bean
Apply
Type here to search
32°C
ENG
03:09 PM
18-11-2022


Redirecting...
workspace
My IBM
final project
Inbox (162) - ahamedriyas29830
127.0.0.1:5500/workspace.html
Analytics
Filters
All tabs
No filters have been applied.
This tab
Crop
Grapes 1
Seasons With Average Productions
With Years Usage O...rea And Production
Top 10 States With Most Area
State With Crop Production
States With The Cro...eason (Text Table)
State_Name and Crop
Crop
State_Name
Grapes
Andhra Pradesh
Haryana
Karnataka
Madhya Pradesh
Maharashtra
Rajasthan
Tamil Nadu
Telangana
Season and Crop
Crop
Season
Grapes
Kharif
Whole Year
Type here to search
32°C
ENG
03:10 PM
18-11-2022



CHAPTER-9

9. ADVANTAGES & DISADVANTAGES

The advantage of this Crop yield estimation it is relatively less time-consuming and inexpensive. We can able to know the average productions of the crop, the amount of crop produced in different year and in different districts and in different area. And it is also used by farmers to make decisions about when to plant and harvest crops based on soil moisture content and weather conditions. The disadvantage of the system is number of data used for the estimation are less. This method is highly subjective, as the informations are collected from the farmers knowledge and experience.

CHAPTER-10

10. CONCLUSION

As a result of penetration of technology into agriculture field, there is a marginal improvement in the productivity. The innovations have led to new concepts like digital agriculture, smart farming, precision agriculture etc. In the literature, it has been observed that analysis has been done on agriculture productivity, hidden patterns discovery using data set related to seasons and crop yields data. We have noticed and made analysis about different crops cultivated, area and productions in different states and districts using IBM Cognos some of them are 1) Seasons with average productions. In this analytics we come to know in which seasons the average production is more and in which seasons the production is less. 2) Production by crop year. In this analysis we come to know in which years the production is high and low. 3) Production by District. With this analytics we can aware of the districts with the selected crops cultivated and states too.4) Production by Area. From this we can know how much area should be cultivated and the production will be getting will be estimated. Finally created

the dashboard and made analysis that in which state and in which year with crop area and to what extent the production will be are analysed and it is deployed into an website.

CHAPTER-11

11. FUTURE SCOPE

As a future work, the results of the analysis can be improved, using the large number of crop datasets and more weather parameters. This can be also implemented in machine learning model to build in a strong yield prediction model and analysis of all the crops with different climatic conditions and different areas.

CHAPTER-12

12.Appendix

Source Code

home.html

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Home</title>
   <link rel="stylesheet" href="/style/home.css">


   <!-- ============================== google font link ====================================== -->
```

```
    <link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Sofia&effect=3d-float">

<link rel="stylesheet" type="text/css" href="//fonts.googleapis.com/css?family=Nunito" />

</head>
<body>
   <div class="container">
      <!-- title -->
      <div class="title font-effect-3d-float">ESTIMATE THE CROP YIELD USING DATA ANALYTICS</div>
      <!--details -->
      <div class="details">
         <p class="teamId">Team ID:PNT2022TMID50867</p>
        <!-- members -->
         <p>Esai Selvan J</p>
         <p>Abdul Rahuman S</p>
         <p>Ahamed Riyas I</p>
         <p>Senthil Kumar P</p>
         <p>Vijaya Kumar A</p>
      </div>
      <!-- workspace link -->
      <div class="workspace-link">
         <a href="workspace.html">Go to Workspace</a>
      </div>
   </div>
</body>
</html>
```

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <link rel="stylesheet" type="text/css" href="./style/index.css">
   <title>LogIn</title>
   <script  type="text/javascript" src="index.js"></script>
</head>
<body>
   <!-- login form -->
```

```
    <div class="logform">
        <img src="./Images/profile_boyIcon.png" alt="profile" class="profilePic">
        <form name="loginForm" >
            <h1>Login</h1>
            <p>User name</p>
            <input  type="text"  name="uname"  id="username"  placeholder="Enter User name">

            <p>Password</p>
            <input  type="password"  name="upswd"  id="password"  placeholder="Enter Password">

            <div id="ErrorBox"></div><br>


            <button  type="button"  onclick="login()"  class="sub-btn">Submit</button>
            <input type="reset"  class="reset-btn">
            <br>
         <p>Doesn't  have  a  account?New  user?<a href="/register.html">Register</a></p>
        </form>


    </div>

</body>
</html>
```

register.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script src="index.js"></script>
    <link rel="stylesheet" href="./style/index.css">
    <title>register</title>
</head>
<body>
    <div class="logform">
        <img src="./Images/profile_boyIcon.png" alt="profile" class="profilePic">
```

```
        <form name="regForm"  >
            <h1>Register</h1>
            <p>User name</p>
            <input type="text" name="uname1" id="username" placeholder="Enter user name">

            <p>Password</p>
            <input type="password" name="password1" id="password" placeholder="Enter Password">
            <p>Confirm Password</p>
            <input type="password" name="repassword1" id="password1" placeholder="Enter Comfirm password">

            <br>
                    <button type="button" onclick="register()" class="sub-btn">Submit</button>
                    <input type="reset" class="reset-btn">

        </form>
        <p>Already user?<a href="index.html">Login</a></p>

    </div>

</body>
</html>
```

workspace.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="style/workspace.css">
    <title>workspace</title>
</head>
<body>
    <div class="ws-container">
        <div class="ws">
        <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;amp;pathRef=.my_folders%2FCrop%2BData%2BAnalytics&amp;amp;closeWindowOnLastView=true&amp;amp;ui_appbar=false&amp;amp;ui_navbar=false&amp;amp;shareMode=embed
```

```
ded&amp;amp;action=view&amp;amp;mode=dashboard&amp;amp;subView=model0000018
4813bb0dc_00000002" width="320" height="200" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
   </div>
      <div class="homepage-link">
         <a href="home.html">Go to Homepage</a>
      </div>
   </div>
</body>
</html>
```

index.js

```
var data = [
  {
     username:"esai",
     password:"0020"
  },
  {
     username:"abdul",
     password:"0001"
  },
  {
     username:"riyas",
     password:"0004"
  },
  {
     username:"senthil",
     password:"0050"
  },
  {
    username:"vijay",
    password:"0055"
}
]
function login(){
  var uname = document.getElementById("username").value
  var pass = document.getElementById("password").value

  for (i = 0; i<data.length; i++){
     if (uname == data[i].username && pass == data[i].password){
        window.location.replace("home.html")
        return false
```

```
        }
    }
    alert("incorrect password")
}
function register(){
    var runame = document.getElementById("username").value
    var rpass = document.getElementById("password").value
    var rpass1 = document.getElementById("password1").value
    if (rpass == rpass1){
        var rdata = {
            username: runame,
            password: rpass
        }
    }else{
        alert("password doesn't match")
        return
    }

    for (i = 0; i<data.length; i++){
        if (runame == data[i].username){
            alert("Username not available")
            return false
        }
    }
    data.push(rdata)
    window.location.replace("home.html")
}
```

home.css

```
html{
    scroll-behavior: smooth;
}
*::selection{
    color: #000000;
    background-color:#505050;
}
body{
    background: url(../Images/homeBackground.jpeg) no-repeat fixed center;
    -webkit-background-size: cover;
    -moz-background-size: cover;
    -o-background-size: cover;
    background-size: cover;
    background-color: #f6f5f5;
```

```
    margin: 0px;
    padding: 0px;
    position: relative;
}
ul{
    list-style: none
}
a{
    text-decoration: none;
}

/* ------------------------------------------------ home ------------------------------------
--- */
.container{
    width: 80%;
    height: 800px;
    background-color: #fff;
    position: absolute;
    left: 50%;
    top: 50px;
    transform: translate(-50%,0%);
    opacity: 0.58;
    border-radius: 25px;
    box-shadow: 2px 2px 12px rgba(0, 0, 0,0.3);
}

.container .title{
    margin-top: 20px;
    text-align: center;
    font-size: 55px;
    padding-bottom: 60px;
    color: rgb(19, 57, 19);
}
.container .details{
    text-align: center;
    font-size: 25px;
    font-family: Nunito;
}
.container .teamId{
    color: #505050;
    font-weight:bold;
    font-size: 35px;
    padding-bottom: 20px;
```

```
}
.button{
    font-size: 30px;
}
.workspace-link a{
    text-align: center;
    background-color: #1e5a19;
    width: 350px;
   font-weight:bolder;
   font-size: 30px;
   color: #fff;
    position: absolute;
    left: 50%;
    bottom: 50px;
    transform: translateX(-50%);
    border: none;
    border-radius: 15px;
    padding: 10px;
    box-shadow: 4px 4px 10px rgba(0, 0, 0, 0.7);
}
.workspace-link a:hover{
    color: #202020;
}
.workspace-link a:active{
    width: 360px;
}
```

index.css

```
html{
    scroll-behavior: smooth;
 }
 *::selection{
    color: #000000;
    background-color:#505050;
 }body{
    background: url(../Images/loginBackground.jpeg) no-repeat fixed center;
    -webkit-background-size: cover;
    -moz-background-size: cover;
    -o-background-size: cover;
    background-size: cover;
    margin: 0%;
```

```
}
.logform{

    background-color:lightgrey;
    display: inline-block;
    padding: 30px;
    position: absolute;
    top: 50%;
    left: 50%;
    box-sizing: border-box;
    transform: translate(-50%,-50%);
    border-radius: 10px;
    opacity: 0.8;
    box-shadow: 2px 2px 12px rgba(0, 0, 0,0.3);

}
.profilePic{
    width:100px;
    height: 100px;
    position: absolute;
    top:-50px;
    left:calc(50% - 50px);



}
a{
    text-decoration: none;
    line-height: 50px;

}
a:hover{
    text-decoration:underline;
    color:green
}


input[type='text'],input[type='password'],input[type="email"]{
    border: none;
    background: transparent;
    border-bottom:1px solid #fff;
    outline-style: none;
}
```

```
input{
    width: 100%;
    margin-bottom: 10px;
}

/*     ==========================================     submit button ========================================== */

.submitButton:active{
     transform: scale(1.1);
}

/* ------------------------------------------------------ */
.sub-btn,.reset-btn{

    width: 100px;
    border: 0px;
    border-radius:5px ;
    background-color: green;
    padding: 5px;
}
```

workspace.css

```
html{
    scroll-behavior: smooth;
}
*::selection{
    color: #000000;
    background-color:#505050;
 }

ul{
    list-style: none
}
a{
    text-decoration: none;
}
body{
    background: url(../Images/projectBackground.jpg) no-repeat fixed center;
```

```
    -webkit-background-size: cover;
    -moz-background-size: cover;
    -o-background-size: cover;
    background-size: cover;
    background-color: #f6f5f5;
    margin: 0px;
    padding: 0px;
    position: relative;
}
/* ------------------------------------------ home page link ----------------------------
----------------*/
.homepage-link a{
    text-align: center;
    background-color: #06370c;
    color: #fff;
    width: 350px;
   font-weight:bolder;
   font-size: 30px;
   border-radius: 15px;
    padding: 10px;
    box-shadow: 4px 4px 10px rgba(0, 0, 0, 0.7);
    opacity: 0.7;
}
.homepage-link a:hover{
    color: #000;
}
.homepage-link:active{
    transform: scale(1.05);
}
/*  ------------------------------------------------------------------------------------------
---------- */
.ws-container{
    display: flex;
    flex-direction: column;
    justify-content: center;
    align-items: center;}
.ws{
    width: 90%;
    height: 820px;
    background-color: #fff;
    margin: 40px;
    border-radius: 25px;
    box-shadow: 2px 2px 12px rgba(0, 0, 0,0.3);
```

}

Github & Project Demo Link:

Github: https://github.com/IBM-EPBL/IBM-Project-42532-1660667031
Project Demo:
https://drive.google.com/file/d/17YsurFRqhfyyys7aPgowKGPUr-MvcQLm/view?usp=share_link