

# **ESTIMATE THE CROP YIELD USING DATA ANALYTICS**

## **INTRODUCTION**

Crop yield prediction is one of the challenging tasks in agriculture. It plays an essential role in decision making at global, regional, and field levels. The prediction of crop yield is based on soil, meteorological, environmental, and crop parameters. Crop prediction attributes are defined by multiple factors such as genotype, climate and the interactions between the two. Accurate crop prediction needs a fundamental understanding of the functional relationship between cultivation and interactive factors like the genotype and climate.

## **PROJECT OVERVIEW**

Data analytics based on prior crop prediction, soil quality analysis to achieve high crop yield throughout technology solution. The main objectives of this project is to predict crop-yield which can be extremely useful to farmers in planning for harvest and sale of grain harvest.

## **PURPOSE**

Crop yield estimation has an important role on economy development. These predictions warn the decision makers about potential reduction in crop yields and allow timely import and export decision.

## **LITERATURE SURVEY**

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 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. Data analytics 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.

## **EXISTING PROBLEM**

Initially the raw data set was collected and it is subjected to preprocess for noise removing (replacement of missing values) and computational methods. From that dataset, it is subjected to Feature selection for make a predictive modeling. In this proposed approach it is mainly focused on Regression Techniques. Various regression analysis should be performed and it was compared and tested. Regression analysis is a form of predictive modeling technique which investigates the association between a dependent (target) and independent variable(s) (predictor). This technique is used for forecasting, time series modeling and discovers the causal effect relationship between the variables. Regression analysis indicates the significant relationships between dependent variable and independent variable and it indicates the strength of impact of multiple independent variables on a dependent variable.

## **REFERENCES**

1. Apolo-Apolo OE, Martínez-Guanter J, Egea G, Raja P, PérezRuiz M. 2020. Deep learning techniques for estimation of the yield and size of citrus fruits using a UAV. *European Journal of Agronomy*. 115. doi:<https://doi.org/10.1016/j.eja.2020.126030>. [Crossref], [PubMed], [Web of Science ®], [Google Scholar]
2. Apolo-Apolo OE, Pérez-Ruiz M, Martínez-Guanter J, Valente J. 2020. A cloudbased environment for generating yield estimation maps from apple orchards using UAV imagery and a deep learning technique. *Frontiers in Plant Science*. 11. doi:<https://doi.org/10.3389/fpls.2020.01086>. [Crossref], [PubMed], [Web

of Science ®], [Google Scholar]

3. Chlingaryan A, Sukkarieh S, Whelan B. 2018. Machine learning approaches for crop yield prediction and nitrogen status estimation in precision agriculture: A review. Computers and Electronics in Agriculture. 151:61–69. doi:<https://doi.org/10.1016/j.compag.2018.05.012>. [Crossref], [Web of Science ®], [Google Scholar]

4. Dharani M, Thamilselvan R, Natesan P, Kalaivaani P, Santhoshkumar S. 2021. Review on crop prediction using deep learning techniques. Paper presented at the Journal of Physics: Conference Series. [Crossref], [Google Scholar]

## PROBLEM STATEMENT DEFINITION

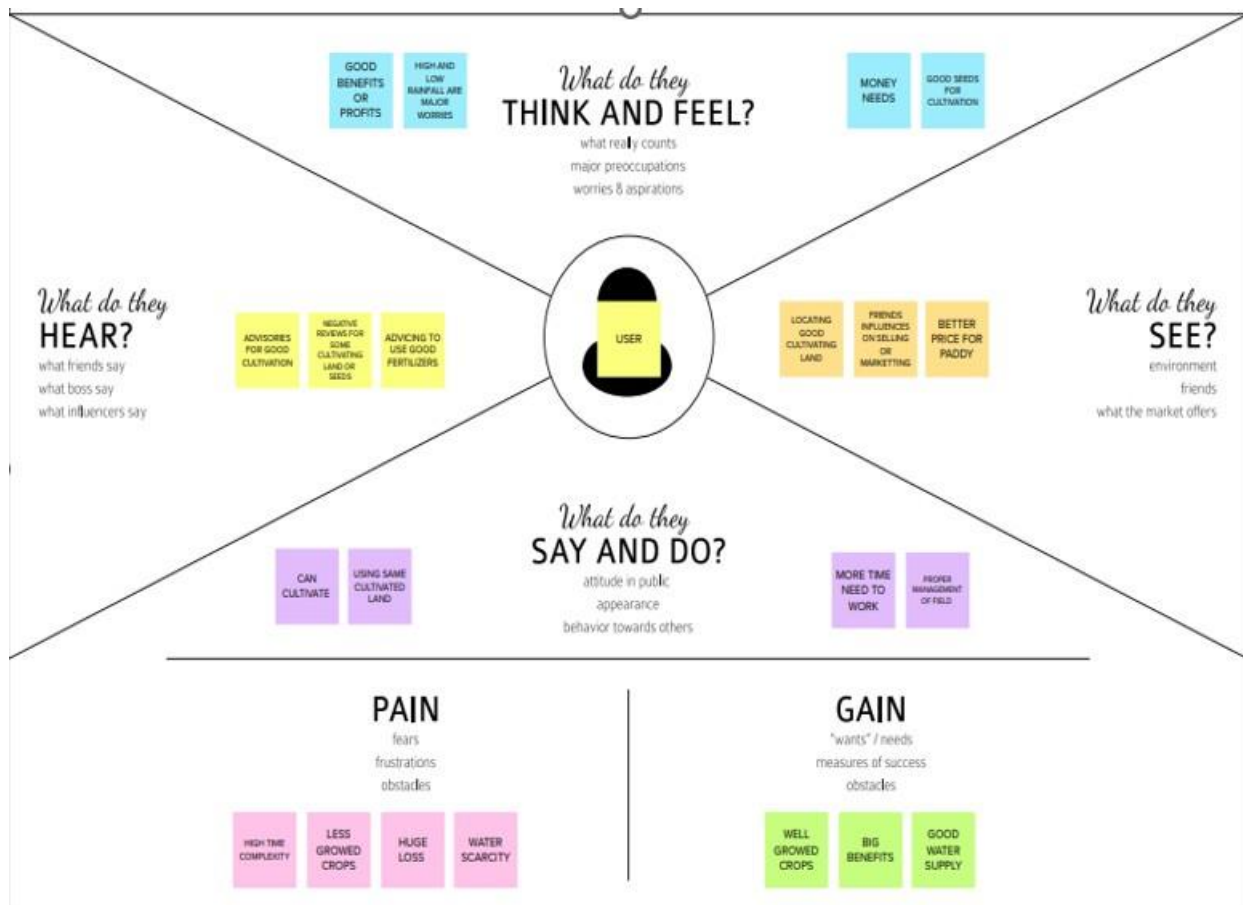
Data based on prior crop prediction, soil quality analysis to achieve high crop yield throughout technology solution. The main objectives of this project is to predict crop-yield which can be extremely useful to farmers in planning for harvest and sale of grain harvest.

1.What does the problem affect?	<b>1.Water availability</b> <b>2.Air pollution</b> <b>3.Temperature etc...</b>
---------------------------------	--

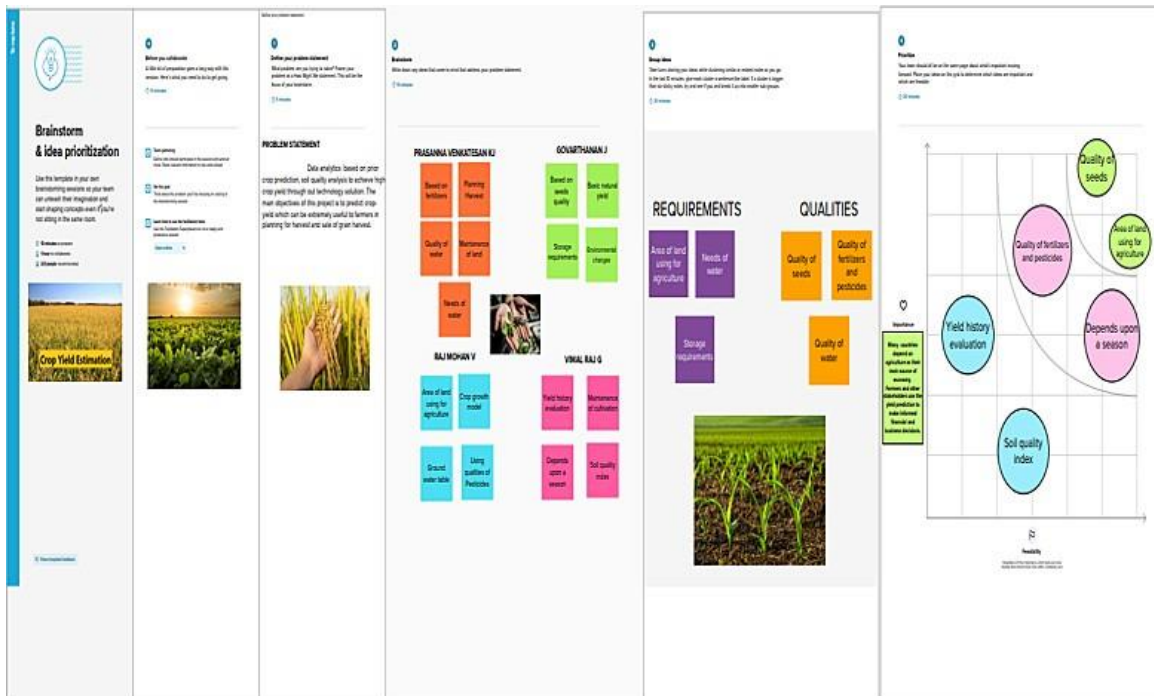
2.What are the boundaries for the problem?	<b>Boundary line analysis is one way to examine how soil variables influences crop yield in large datasets</b>
3.What is the issue?	<b>1.Changing of climate 2.Sudden change in Weather</b>
4.When does the issue occur?	<b>1.No Proper maintenance 2. Over dose of pesticides and fertilizers</b>
5.Why it is important that we fix the problem?	<b>Improving the yields in crop on a global basis will allow farmers to meet global demand for feed, fuel and food while minimizing the need to bring amount of the new land into the crop production.</b>
6.What methodology used to solve the issue?	<b>1.Monitoring crops growth 2. Regular Scouting 3.Crop protection</b>
7.where does the issue occur?	<b>Using the fertilizers and pesticides above the limited levels it can be caused the Crop severely.</b>

## IDEATION & PROPOSED SOLUTION

## EMPATHY MAP CANVAS



# IDEATION & BRAINSTORMING



# PROPOSED SOLUTION

In this proposed system, the datasets are collected and refined based on the commonality. The input parameters are given. By analysing and predicting using KNN algorithm, the result are produced and some suggestions are given.

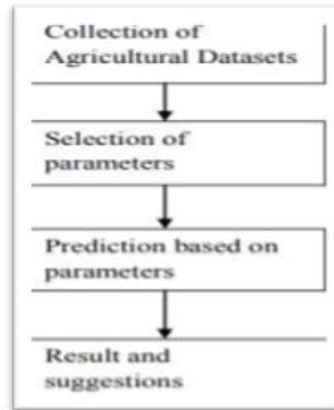


Fig. -1: Proposed Architecture

**Step 1:** The datasets have been collected and refined based on commonality uses such as location, crop, Area, soil type, temperature, humidity etc. From these parameters name of the crop and net yield rate of the crop can be predicted.

**Step 2:** Based on various analyses the parameters location, soil type and area are taken as input and prediction have been undertaken. The attribute soil type specifies the type of soil in a particular region such as Coastal alluvials, Laterite soil and Dark brown alayey soil and the attribute location specifies the 4 different areas such as Mangalore, Kodagu, Hassan, Kasargod.

**Step 3:** By using KNN algorithm, the particular crop has been analysed and predicted by taking various parameters into an account such as soil type area and location.

**Step 4:** By analysing and predicting the crop name and price of particular crop can be found out. This helps the farmers to take the correct decision to sow the crops such that yield rate can be increase.



# PROBLEM SOLUTION FIT

Project Title: Estimate the Crop Yield using Data Analytics

Project Design Phase-I - Solution Fit

Team ID: PNT2022TMID19656

Define CS, fit into CC	<b>1. CUSTOMER SEGMENTATION</b> <b>CS</b> <ul style="list-style-type: none"> <li>Farmers</li> <li>Individuals associated with agricultural activities, cultivation, harvest and sales of the harvested goods.</li> </ul>	<b>6. CUSTOMER CONSTRAINTS</b> <b>CC</b> <p>What constraints prevent your customer from taking action or limit their choices of solutions, i.e. spending power, budget, no cash, network connection, available devices.</p> <ul style="list-style-type: none"> <li>Monetary issues</li> <li>Network issues</li> <li>Lack of Awareness</li> <li>Quality of soil, manure, water etc.</li> </ul>	<b>5. AVAILABLE SOLUTIONS</b> <b>AS</b> <p>What is the existing solution to the problem, when they face the problem?</p> <p>What do they need to get the job done? What have they tried in the past? What pain do these solutions have? i.e. pen and paper is an alternative to digital note-taking</p> <ul style="list-style-type: none"> <li>Traditional ways of prediction</li> <li>Precision farming</li> </ul>	Explore AS, differentiate
	<b>2. JOBS TO BE DONE / PROBLEMS</b> <b>J&amp;P</b> <ul style="list-style-type: none"> <li>Help them understand the usage of prediction and software for better results in agriculture</li> <li>Data is to be collected and awareness should be brought in order to orchestrate the above mentioned</li> </ul>	<b>9. PROBLEM ROOT CAUSE</b> <b>RC</b> <ul style="list-style-type: none"> <li>Weather conditions</li> <li>Soil Conditions</li> <li>Water availability</li> <li>Unpredictable weather conditions</li> <li>Pest issues</li> <li>Manure and other usages</li> <li>Crop resistance</li> </ul>	<b>7. BEHAVIOUR</b> <b>BF</b> <ul style="list-style-type: none"> <li>Try to get help from agricultural experts</li> <li>Try to take up non-natural means of cultivation for quicker harvest</li> </ul>	

Identify strong TR & EM	<b>3. TRIGGERS</b> <b>TR</b> <p>What triggers customers to act? i.e. seeing their neighbors installing solar panels, reading about a more efficient solution in the news.</p> <p>Seeing their neighbor farmers have a better yield by usage of natural or non-natural means</p>	<b>10. YOUR SOLUTION</b> <b>SL</b> <p>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behavior.</p> <p>An interactive, visualization dashboard that precisely indicates the predictions of the needed parameters for farmers to get insights about what is needed. It is a one-stop solution and there is no extra setup that is required.</p>	<b>8. CHANNELS of BEHAVIOUR</b> <b>CH</b> <p><b>8.1 ONLINE</b>          What kind of actions do customers take online? Extract online channels from 7.</p> <p>None</p> <p><b>8.2 OFFLINE</b>          What kind of actions do customers take offline? Extract offline channels from 7 and use them for customer development.</p> <ul style="list-style-type: none"> <li>Trying to use pesticides and fertilizers that increase gain but cause harm</li> <li>Irrigation channel changes</li> </ul>	Identify strong TR & EM
	<b>4. EMOTIONS: BEFORE / AFTER</b> <b>EM</b> <p>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure &gt; confident, in control - use it in your communication strategy &amp; design.</p> <p>Before: insecure &gt; strength / trust of growth: After</p>			

## REQUIREMENT ANALYSIS

### FUNCTIONAL REQUIREMENT

The Functional Requirements Definition reports and tracks the basic information expected to effectively portray business and handy necessities. The Functional Requirements Definition report is made in the midst of the Planning

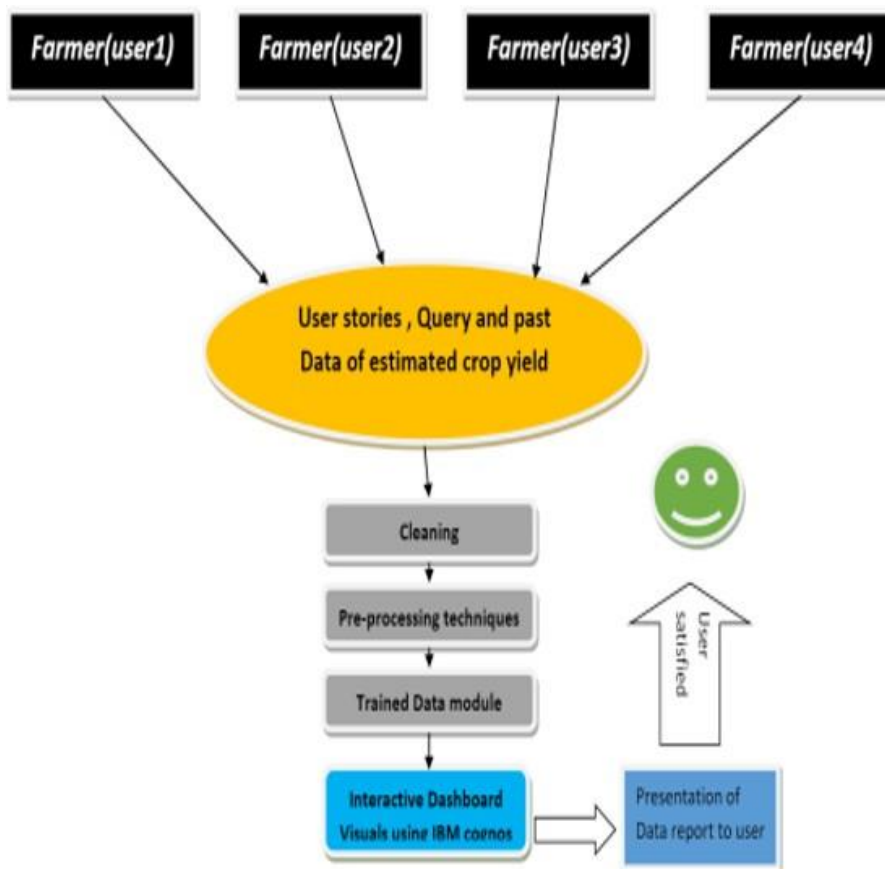
Phase of the endeavor. Its objective gathering is the endeavor boss, errand gathering, wander bolster, client/customer, and any accomplice whose information/respect into the necessities definitions system is required

## NON-FUNCTIONAL REQUIREMENTS

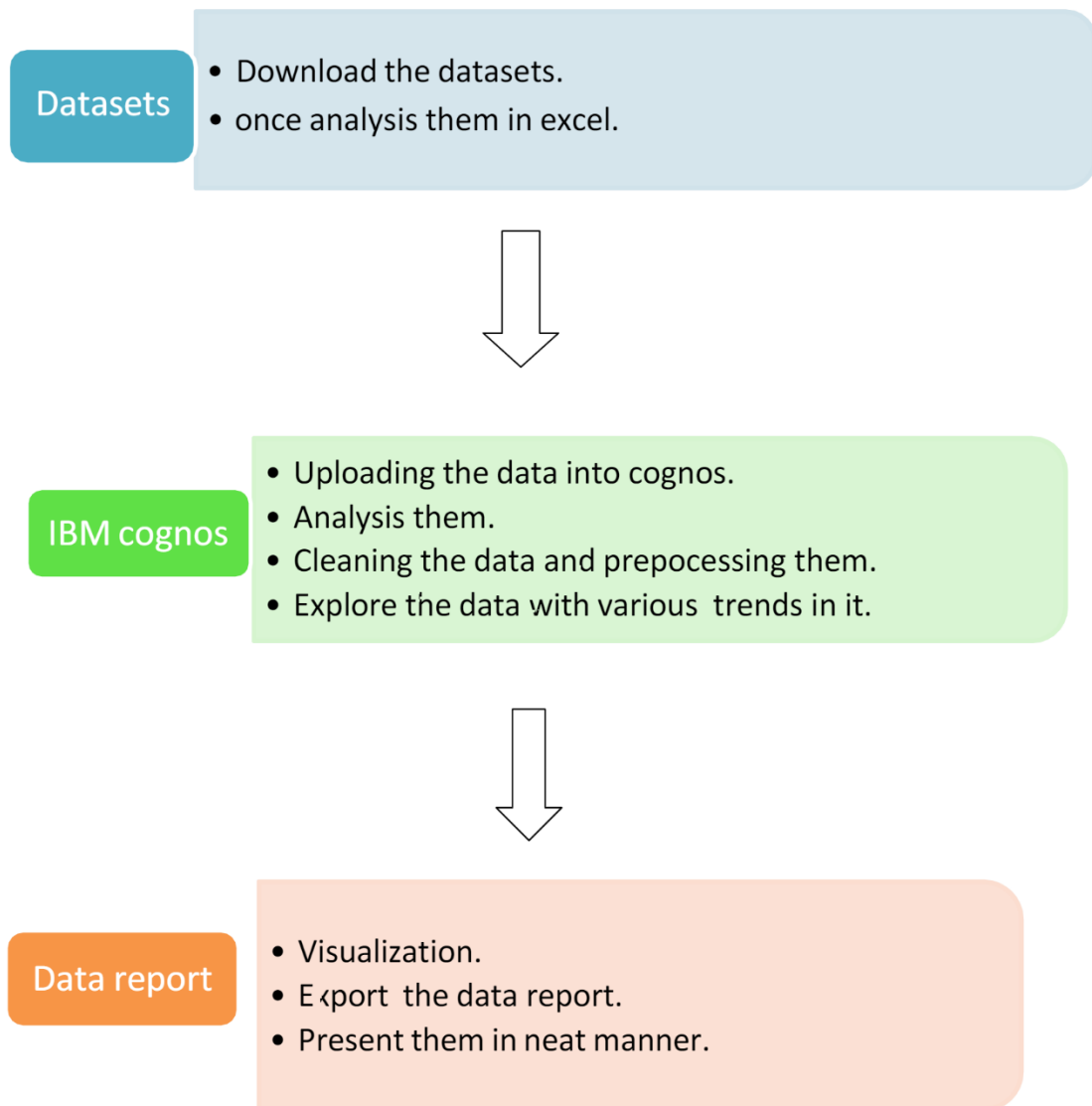
A non-functional requirement (NFR) is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. Non functional requirements specifies the quality attribute of a software system. The software system can be judged based on reliability, security, maintainability, performance, portability, scalability and flexibility

## PROJECT DESIGN

### DATA FLOW DIAGRAMS



## SOLUTION & TECHNICAL ARCHITECTURE



## USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Google	I can register & access the dashboard with Google Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user, I can freely use my dashboard and explore the features		High	Sprint-1
	Access of Resources	USN-7	As a user, I can use the credentials to access the resources of my application	I can securely access my resources	High	Sprint-2
Administrator	Control over the application	USN-8	I can control the users of the application		High	Sprint-2
Customer	Tools	USN-9	I can perform the required tasks on the application		High	Sprint-1

## PROJECT PLANNING & SCHEDULING

## SPRINT PLANNING & ESTIMATION

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1 Offering

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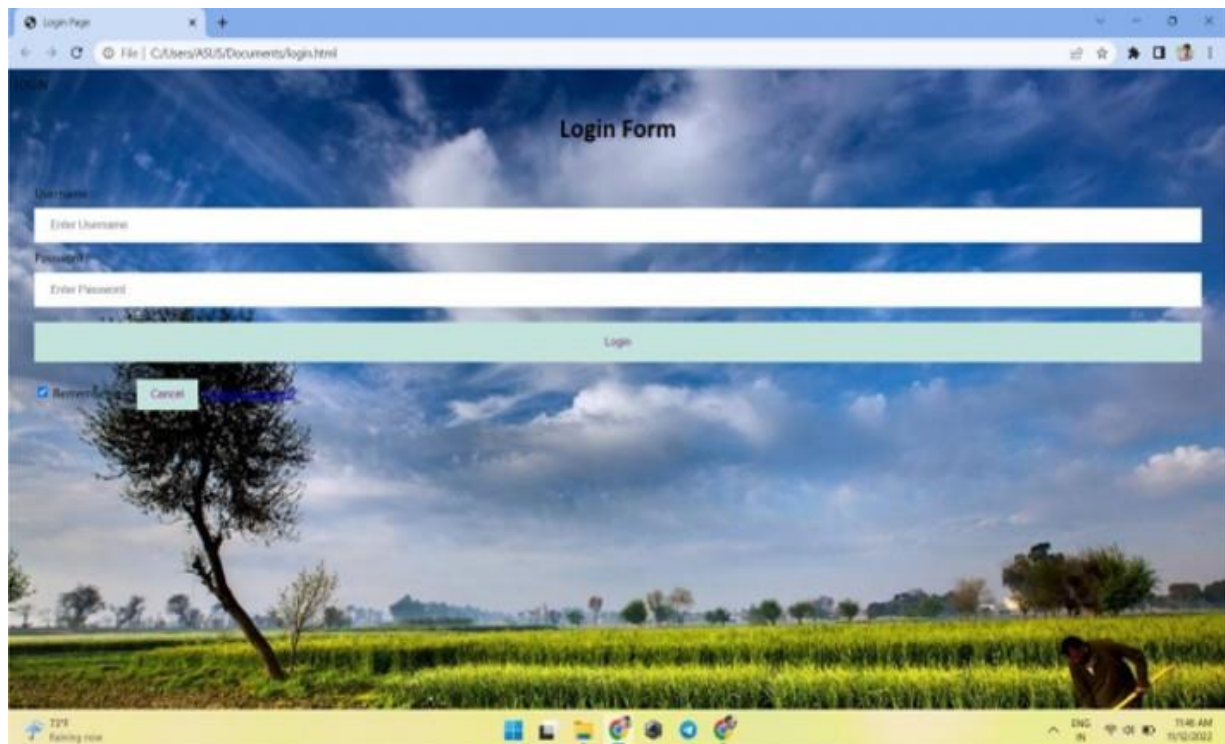
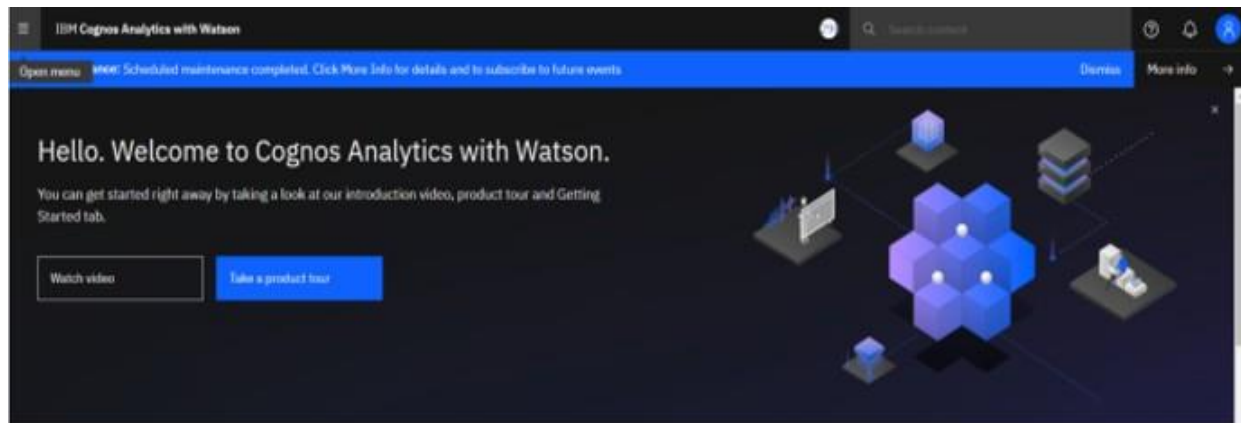
**Active**  
Expires on Sep 6, 2023

[Launch](#) [Manage](#)

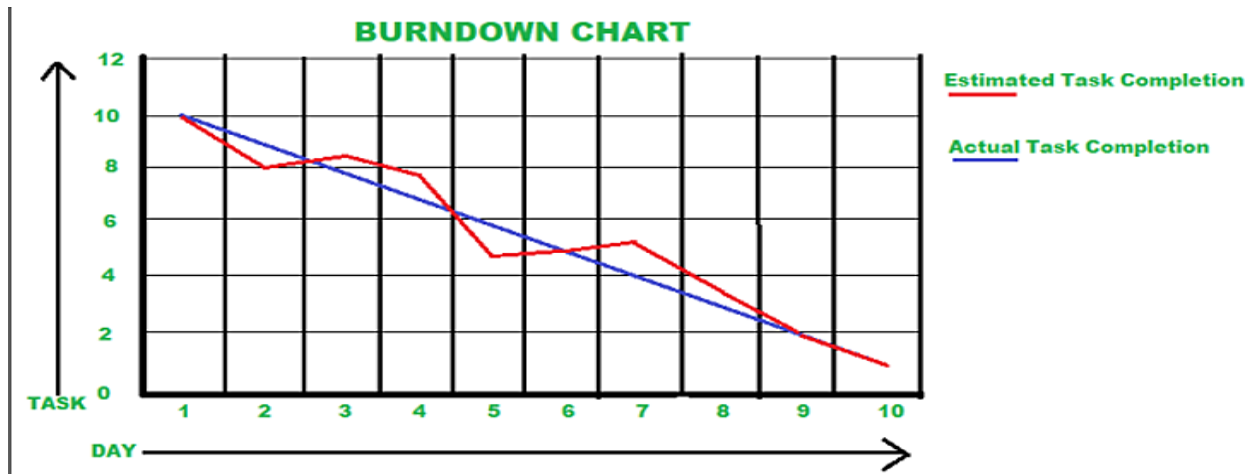
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## SPRINT DELIVERY SCHEDULE



## REPORTS FROM JIRA

### Roadmap

<input type="text"/>							Status c
Sprints							UDA Sprint 1
>		ECYUDA-15 Registration					
>		ECYUDA-16 Login					
>		ECYUDA-17 Working with Dataset					
>		ECYUDA-18 Data visualization chart					
>		ECYUDA-19 Creating Dashboard					
>		ECYUDA-20 Export the Analytics					



Jira Software Your work Projects Filters Dashboards People Apps Create

Estimate the crop yield  
Software project

PLANNING

- Roadmap
- Backlog
- Board
- Reports

DEVELOPMENT

- Code

Project pages

- Add shortcut
- Project settings

Assigned to me Recent Boards

WORKED ON

- Export the created Dashboard  
ECYUDA-14 - Estimate the crop yield using data analytics
- Export the Analytics  
ECYUDA-20 - Estimate the crop yield using data analytics
- Create the Dashboard by using the created visualizations.  
ECYUDA-13 - Estimate the crop yield using data analytics
- Creating Dashboard  
ECYUDA-19 - Estimate the crop yield using data analytics
- Build Visual analytics to represent the Sales with Seasonal Crop Production using a Text representation.  
ECYUDA-12 - Estimate the crop yield using data analytics
- Build the required Visualization to showcase the Crop Production by State.  
ECYUDA-11 - Estimate the crop yield using data analytics
- Build a visualization to show case top 10 States in Crop Yield Production by Area.  
ECYUDA-10 - Estimate the crop yield using data analytics
- \*Showcase the Yearly usage of Area in Crop Production.  
ECYUDA-9 - Estimate the crop yield using data analytics
- Using the Crop production in Indian dataset, create various graphs and charts to highlight the insights and visual..  
ECYUDA-8 - Estimate the crop yield using data analytics

Go to Your Work page

## Velocity report



## Cumulative flow diagram



**CODING & SOLUTIONING (Explain the features added in the project along with code)**

### **FEATURE 1**

#### **LOGIN**

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

```
<title> Login Page </title>
```

```
<style>
```

```
Body {
```

```
    font-family: Calibri, Helvetica, sans-serif;
```

```
    background-color:white;
```

```
        background-image:url('https://2.bp.blogspot.com/-  
pLLWS1j5PCQ/VqyQUTUqtdI/AAAAAAAAABE64/QYIUh6421co/s1600/2d
```

```
e5113b6a62d0360130b90442106237_large.jpeg');"

```

```


```

```
button {

```

```
    background-color:#c3e3dc;

```

```
    width: 100%;

```

```
    color: purple;

```

```
    padding: 15px;

```

```
    margin: 10px 0px;

```

```
    border: none;

```

```
    cursor: pointer;

```

```


```

```
form {

```

```
    border: 3px solid #f156189;

```

```


```

```
input[type=text], input[type=password] {

```

```
    width: 100%;

```

```
    margin: 8px 0;

```

```
    padding: 12px 20px;

```

```
    display: inline-block;

```

```
    border: 2px white;

```

```
    box-sizing: border-box;

```

```


```

```
button:hover {

```

```
    opacity: 0.7;

```

```

    }
    .cancelbtn {
        width: auto;
        padding: 10px 18px;
        margin: 10px 5px;
    }
    .container {
        padding: 25px;
        <!--      background-color: pink;  -->
    }
</style>
</head>
<body>
    <center> <h1>Login Form </h1> </center>
    <form>
        <div class="container">
            <label>Username : </label>
                <input type="text" placeholder="Enter Username"
name="username" required>
            <label>Password : </label>
                <input type="password" placeholder="Enter Password"
name="password" required>
            <button type="submit">Login</button>
            <input type="checkbox" checked="checked"> Remember me
            <button type="button" class="cancelbtn"> Cancel</button>

```

```
        <a href="#"> Forgot password? </a>
    </div>
</form>
</body>
</html>
```

## FEATURE 2

### REGISTRATION

```
<!DOCTYPE html>
<html>
<head>
    <title></title>
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <link rel="stylesheet" type="text/css"
href="{ { url_for('static',filename='style.css') } } ">
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-
awesome/4.7.0/css/font-awesome.min.css">
    <!-- jQuery library -->
    <script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></scr
ipt>
    <!-- Latest compiled JavaScript -->
    <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js">
```

```
</script>
```

```
<script src="https://www.google.com/recaptcha/api.js" async  
defer></script>
```

```
<style type="text/css">
```

```
body{
```

```
    margin: 10px 10px 10px 100px;
```

```
    background-color: aliceblue;
```

```
}
```

```
.error {
```

```
    color: red;
```

```
}
```

```
.fm1 {
```

```
    text-align: center;
```

```
}
```

```
.lb1 {
```

```
    text-align: center;
```

```
    padding: 25px;
```

```
}
```

```
.lb2 {
```

```
    margin-left: 20px;
```

```
}
```

```
.lb3 {
```

```
    margin-right: 35px;
```

```
}
```

```
.container {
```

```
        display: block;
    }
    .k{
        border-radius: 15px;
    }
</style>
</head>

<body>
    <?php
include 'header.php';
?>

    <div class="heading fix">
        <label class="lb1">REGISTRATION</label>
    </div>

    <div class="outerbox">
        <div class="fixedbox">
            <span class="content">
                <h4>Hello, Friend!</h4>
                <p>Enter your personal details and start journey with us</p>
            </span>
        </div>

        <div class="scrollbox">
            <div class="registerdonor">
                <form action="process.php" method="POST" id="myform">
```

```
<div class="login">
  <h3>Login Details</h3>
  <table class="fm1">
    <tr>
      <td colspan="2">
        <label class="lb1" class="username">User Name:-
      </label>
        <input type="text" name="user_name" required
pattern="^[A-Za-z0-9._%+-@]{5,10}$"
        title="Enter a username between 5 to 10 letter"
autocomplete="off">
      </td>
    </tr>
    <tr>
      <td>
        <label class="lb1">Full Name:-</label>
        <input type="text" name="user_full_name" required
pattern="[A-z ]+$"
        title="Use only character & whitespace"
autocomplete="off">
      </td>
    </tr>
    <tr>
      <td>
        <label class="lb1">Email Id:-</label>
```



```

<input type="email" name="user_email" required
    pattern="[A-Za-z0-9._%+-]+@[A-z0-9.-]+\.[a-
z]{2,}"$"
    title="Email id is not Valid" autocomplete="off">
</td>
</tr>
<tr>
<td>
<label class="lb1">Password:-</label>
<input type="password" name="password" required
    pattern="(?=.*\d)(?=.*[a-z])(?=.*[A-Z]).{6,}"
    title="Must contain at least one number and one
uppercase and lowercase letter, and at least 6 or more characters"
    id="password" autocomplete="off">
</td>
</tr>
<tr>
<td>
<label>Confirm Password:-</label>
<input type="text" name="confirm_password"
required
    pattern="(?=.*\d)(?=.*[a-z])(?=.*[A-Z]).{6,}"
    title="Must contain at least one number and one
uppercase and lowercase letter, and at least 6 or more characters"
    id="confirm_password" autocomplete="off">

```

```
</td>
</tr>
</table>
</div>
<div class="container">
  <h3>Contact Details</h3>
  <table class="fm1">
    <tr>
      <td>
        <label>Mobile Number:-</label>
        <input type="text" name="user_number" required
pattern="^[1-9]{1}[0-9]{9}$"
        title="Number is not valid" autocomplete="off">
      </td>
    </tr>
    <tr>
      <td>
        <label class="lb1">Pincode</label>
        <input type="text" name="pincode" required
pattern="^[0-9]{6}$"
        title="Pincode is not valid" autocomplete="off">
      </td>
    </tr>
    <tr>
      <td rowspan="1">
```

```
<label class="lb1">Address:-</label>
<textarea name="Address" placeholder="follow with
pincode" required></textarea>
</td>
</tr>

<!-- <tr>
<td>
<label class="lb1">City:-</label>
<input type="text" name="city">
</td>
</tr> -->
<tr>
<td>
<label class="lb1">State:-</label>
<input type="text" name="state">
</td>
</tr>
</table>
</div>
<div class="personal">
<h3>Personal Details</h3>
<table class="fm1">
<tr>
<td>
```

```

        <label>Date Of Birth:-</label>
        <input type="date" name="date_of_birth" required
autocomplete="off">

    </td>
</tr>
<tr>
    <td>
        <div class="radio">
            <label class="lb3">Gender:-</label>
            <input type="radio" name="gender"
class="radio1" value="Male"><span
                class="radioname" required
autocomplete="off">Male</span>
            <input type="radio" class="radio2"
name="gender" value="Female"><span
                class="radioname" required
autocomplete="off">Female</span>
        </div>
    </td>
</tr>
<tr>
    <td>
        <label class="lb1">Blood Group</label>
        <input type="text" list="bloodgroup"
name="blood_group" placeholder="----Select --- "

```

```

        required autocomplete="off">
        <datalist id="bloodgroup">
            <option value="A+"></option>
            <option value="A-"></option>
            <option value="AB+"></option>
            <option value="B+"></option>
            <option value="B-"></option>
            <option value="O+"></option>
            <option value="O-"></option>
        </datalist>
    </td>
    <!-- <tr>
    <td>
        <label class="lb1">Plasma Type</label >
        <input type="text" list="plasmatype"
name="plasma_type" placeholder="----Select --- "
        required autocomplete="off">
        <datalist id="plasmatype">
            <option value="Hot"></option>
            <option value="Warm"></option>
            <option value="Cold"></option>
            <option value="Ultra Cold"></option>
        </datalist>
    </td>
    </tr> -->

```

```

        <tr>
            <td>
                <label class="lb1">Weight In Kg :-</label>
                <input type="number" name="weight" required
autocomplete="off">
            </td>
        </tr>
    </table>
</div>
<p class="lb2"><input type="checkbox" name="terms"
id="checkbox" required autocomplete="off">
        <!-- I agree to have my contact details broadcasted to the
registered donors of PGHS.net -->
        I agree that the above details are true </p>
        <input type="reset" class="lb2 k" name="submit"
value="Reset">
        <a href="login.html">
            <input type="button" class="lb2 k"
onclick="href='login.html';" value="Submit"></a>
        </div>
    </form>
</div>
</div>
</div>
<!-- Responsive table -->

```

```
<div class="registerdonor">
    <form action="process.php" method="POST" id="myform">
</html>
```

## TESTING

## Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status
LoginPage_TC_001	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account	nil	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Signup popup displayed or not	<a href="https://shopnizer.com/">https://shopnizer.com/</a>	Login/Signup popup should display	Working as expected	Pass
LoginPage_TC_002	UI	Home Page	Verify the UI elements in Login/Signup popup	nil	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Signup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Create account link e.Last password? Recovery password link	<a href="https://shopnizer.com/">https://shopnizer.com/</a>	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Create account link e.Last password? Recovery	Working as expected	Fail
LoginPage_TC_003	Functional	Home page	Verify user is able to log into application with Valid credentials	nil	1.Enter URL( <a href="https://shopnizer.com/">https://shopnizer.com/</a> ) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: chalam@gmail.com password: Testing123	User should navigate to user account homepage		
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Invalid credentials	nil	1.Enter URL( <a href="https://shopnizer.com/">https://shopnizer.com/</a> ) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: chalam@gmail.com password: Testing123	Application should show "Incorrect email or password" validation message.		
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Invalid credentials	nil	1.Enter URL( <a href="https://shopnizer.com/">https://shopnizer.com/</a> ) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter invalid password in password text box 5.Click on login button	Username: chalam@gmail.com password: Testing1236789876543210	Application should show "Incorrect email or password" validation message.		
LoginPage_TC_005	Functional	Login page	Verify user is able to log into application with Invalid credentials	nil	1.Enter URL( <a href="https://shopnizer.com/">https://shopnizer.com/</a> ) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter invalid password in password text box 5.Click on login button	Username: chalam@gmail.com password: Testing1236789876543210	Application should show "Incorrect email or password" validation message.		

## USER ACCEPTANCE TESTING

### PURPOSE OF DOCUMENT

The purpose of this document is to briefly explain the test coverage and open issues of the [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 severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	9	3	2	3	18
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	10	2	4	20	36
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	22	13	13	26	72



## 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
Security	2	0	0	2
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

## RESULTS

### Performance Metrics

#### Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values
1.	Dashboard design	No of Visualizations / Graphs – 5 - 6 visualization/5 - 6 graphs
2.	Data Responsiveness	Users and Analyst or Developers
3.	Amount Data to Rendered (DB2 Metrics)	7 districts
4.	Utilization of Data Filters	Simple or Gravity ,hot and Vacuum Filtration
5.	Effective User Story	No of Scene Added – 40 user stories
6.	Descriptive Reports	No of Visualizations / Graphs – 4 visualization / 4 graph

## ADVANTAGES

Crop yield prediction is also used by farmers to make decisions about when to plant and harvest crops based on soil moisture content, pest infestations, and other factors such as weather conditions and fertilizer requirements.

## **CONCLUSION**

The work demonstrated the potential use of data mining techniques in predicting the crop yield based on the input parameters average rainfall and area of field. The developed webpage is user friendly and the accuracy of predictions are above 90 percent. The districts selected in the study indicating higher accuracy of prediction. The user friendly web page developed for predicting crop yield can be used by any user by providing average rainfall and area of that place. The process was adopted for all the area to improve and authenticate the validity of yield prediction which are useful for the farmers for the prediction of a specific crop.

## **FUTURE SCOPE**

The future work aimed at the analysis of the entire set of data and will be devoted to suitable strategies for improving the efficiency of the proposed algorithm. Use of such kind of approach to forecasting is not restricted to agriculture alone. The clustering and regression is one of the capable tool in field of data mining which can be used in several different ways.

## **APPENDIX**

**GitHub** = <https://github.com/IBM-EPBL/IBM-Project-32360-1660209393>

**Project Demo Link =**