

Ideation Phase

Brainstorm & Idea Prioritization Template

Date	31 January 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In Rice-Type- - Through-Transfer-Learning Classification
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: <https://www.mural.co/templates/brainstorm-and-idea-prioritization>

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Step-2: Brainstorm, Idea Listing and Grouping

Step-3: Idea Prioritization

Brainstorm & idea prioritization




Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👤 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

-  **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.
-  **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.
-  **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

 5 minutes

PROBLEM

How might we classify
Rice Type Through
Transfer Learning ?



Key rules of brainstorming

To run an smooth and productive session

- | | | | |
|--|-----------------|---|-------------------------|
|  | Stay in topic. |  | Encourage wild ideas. |
|  | Defer judgment. |  | Listen to others. |
|  | Go for volume. |  | If possible, be visual. |

2

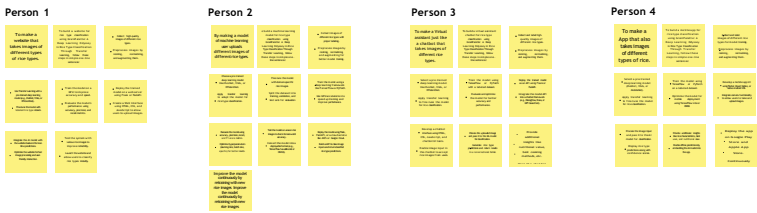
Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!



3

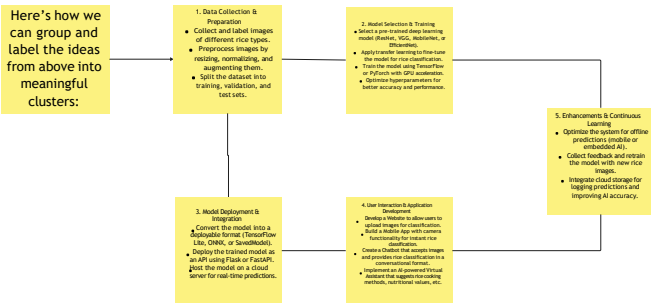
Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.



4

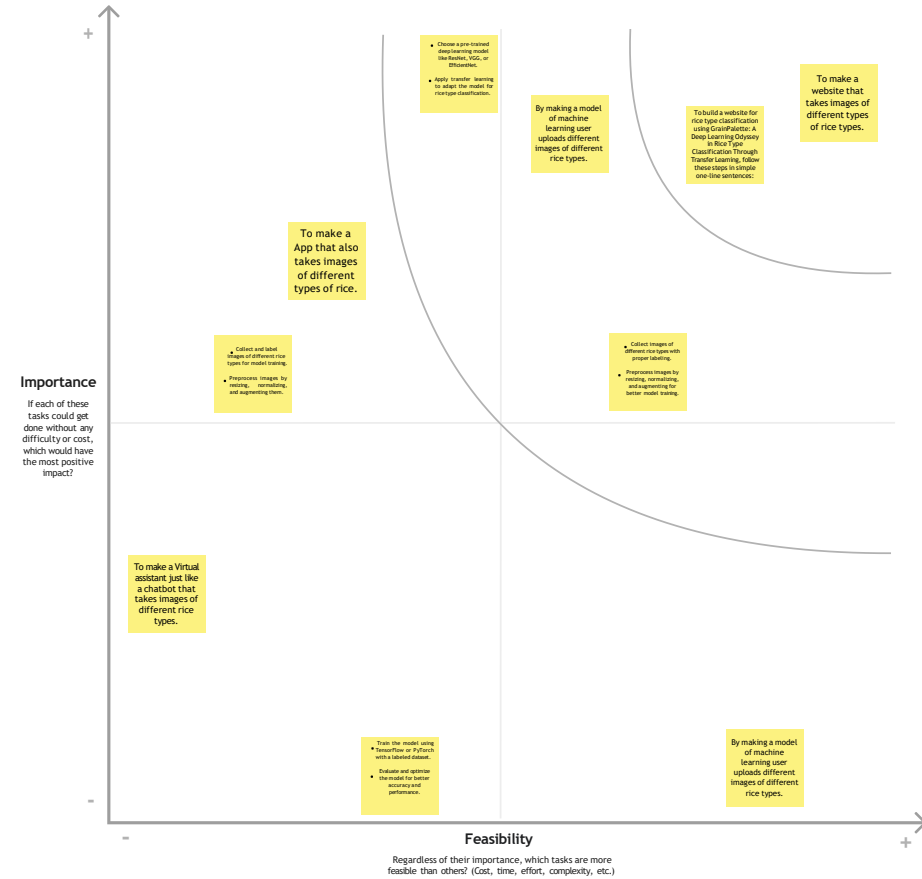
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.



Need some inspiration?

See a finished version
of this template to
kickstart your work.

[Open example](#) →

Ideation Phase

Define the Problem Statements

Date	31 January 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In Rice-Type- -Through-Transfer-Learning Classification
Maximum Marks	2 Marks

Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

I am	Describe customer with 3-4 key characteristics - <i>who are they?</i>	Describe the customer and their attributes here
I'm trying to	List their outcome or "job" the care about - <i>what are they trying to achieve?</i>	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way - <i>what bothers them most?</i>	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists - <i>what needs to be solved?</i>	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view - <i>how does it impact them emotionally?</i>	Describe the emotions the result from experiencing the problems or barriers

Reference: <https://miro.com/templates/customer-problem-statement/>

Example:



P r o b l e m S t a t e m e n t (P S)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
P S- 1	<div>I am a quality control analyst</div> <div>I am a agricultural researcher</div> <div>I am a rice producer</div> <div>I am a food scientist</div> <div>quality assurance manager</div> <div>food industry executive</div> <div>supply chain manager</div> <div>rice exporter</div>	<div>classify different rice types accurately and efficiently.</div> <div>develop better rice classification techniques</div> <div>identify the quality of my rice quickly and accurately</div> <div>ensure rice meets industry and safety standards</div> <div>ensure that our rice classification meets industry standards</div> <div>implement technology that improves rice classification efficiency.</div> <div>ensure accurate classification for smooth distribution and pricing</div> <div>ensure that my rice meets international quality standards</div>	<div>manual classification is slow and inconsistent.</div> <div>traditional methods are inefficient and difficult to scale</div> <div>current classification methods are time-consuming and costly</div> <div>inconsistent classification affects quality control</div> <div>manual classification leads to inconsistencies and delays</div> <div>current processes are slow and not scalable</div> <div>inconsistencies in rice classification disrupt logistics</div> <div>manual classification methods are prone to error and slow the process.</div>	<div>it relies on subjective human judgment.</div> <div>they require excessive manual effort and lack automation</div> <div>they require expert knowledge and manual sorting</div> <div>manual inspection varies from person to person</div> <div>it depends on human expertise and subjective judgment</div> <div>they depend on manual inspection and lack automation</div> <div>quality variations lead to disputes and inefficiencies</div> <div>they rely on human perception and outdated techniques.</div>	<div>frustrated and concerned about maintaining quality standards.</div> <div>limited in my ability to innovate and improve agricultural research.</div> <div>worried about delays and financial losses.</div> <div>concerned about food safety and regulatory compliance.</div> <div>concerned about maintaining product quality and meeting compliance requirements.</div> <div>pressured to find innovative solutions that reduce costs and increase accuracy.</div> <div>frustrated by operational inefficiencies and the risk of financial loss.</div> <div>worried about meeting export regulations and losing market opportunities.</div>

Ideation Phase

Empathize & Discover

Date	31 January 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In Rice-Type- - Through-Transfer-Learning Classification
Maximum Marks	4 Marks

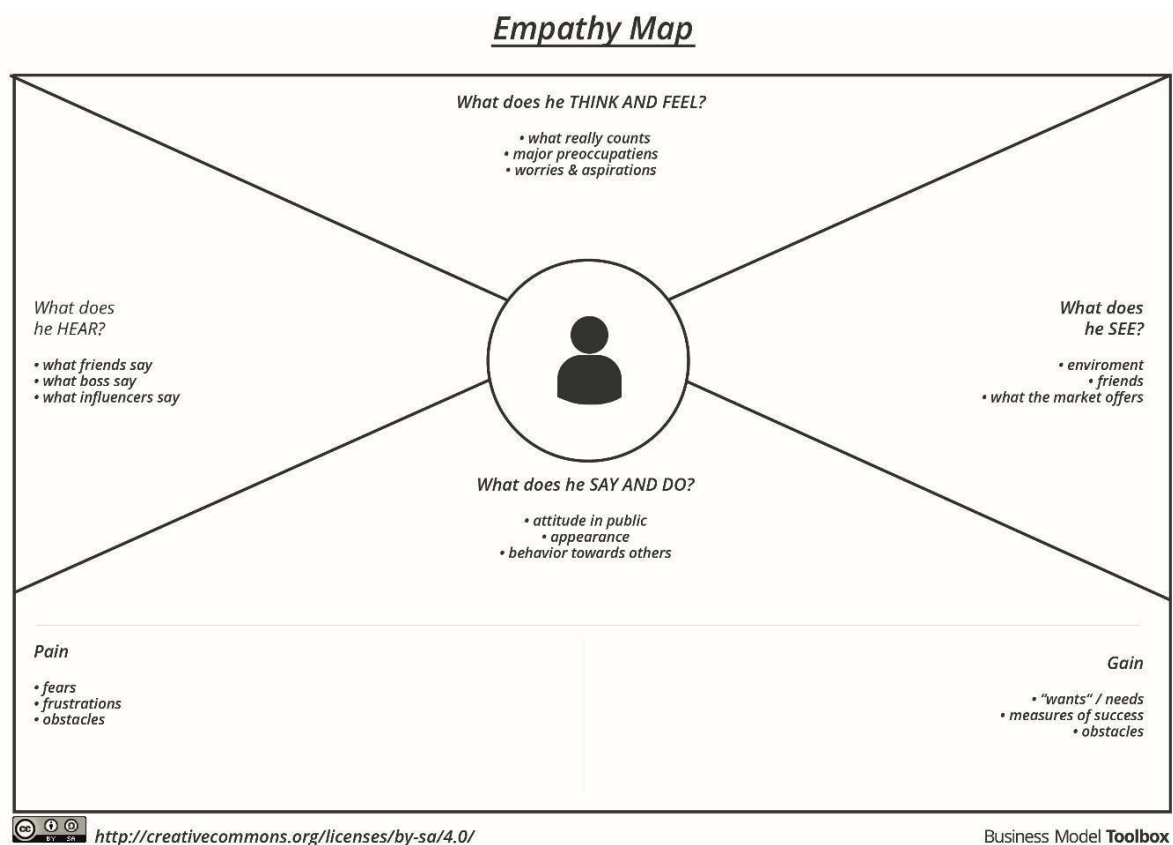
Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

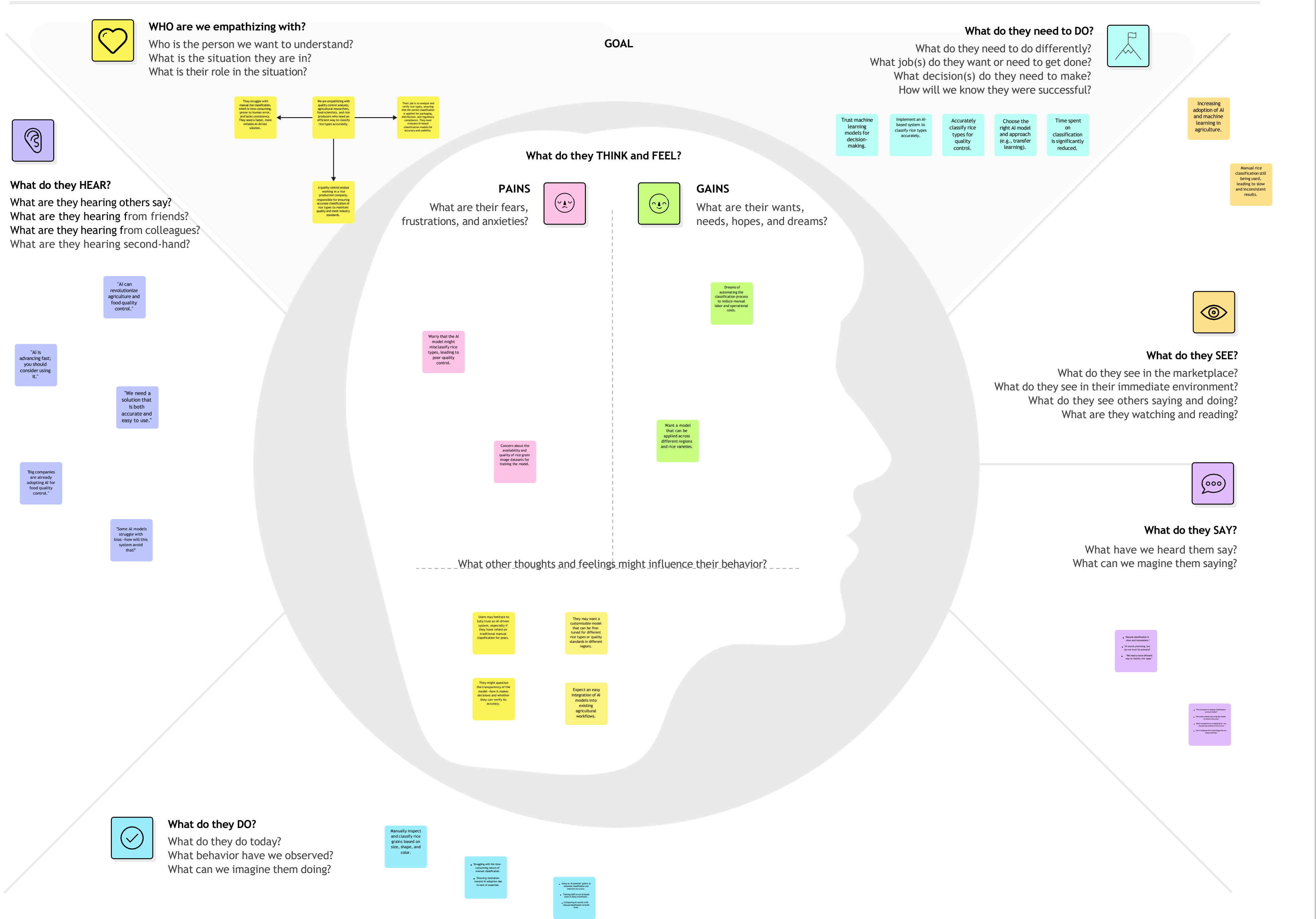
It is a useful tool to help teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:



Reference: <https://www.mural.co/templates/empathy-map-canvas>

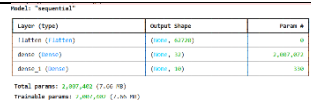
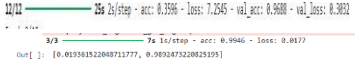


Project Development Phase Model Performance Test

Date	10 February 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In-Rice-Type- -Through-Transfer-Learning Classification
Maximum Marks	-

Model Performance Testing:

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

S. No.	Parameter	Values	Screenshot
1.	Model Summary	-	
2.	Accuracy	Training Accuracy –0.9688 Validation Accuracy -0.9892	
3.	Fine Tuning Result (if done)	Validation Accuracy -	-

Project Design Phase

Problem – Solution Fit Template

Date	15 February 2025
Team ID	LTVIP2025TMID45731
Project Name	GrainPalette-A-Deep-Learning-Odyssey-In-Rice-Type-Classification-Through-Transfer-Learning
Maximum Marks	2 Marks

Problem – Solution Fit Template:

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

Purpose:

- ☐ Solve complex problems in a way that fits the state of your customers.
- ☐ Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- ☐ Sharpen your communication and marketing strategy with the right triggers and messaging.
- ☐ Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- ☐ **Understand the existing situation in order to improve it for your target group.**

Template:

Problem-Solution Fit canvas		Purpose / Vision	Version:												
<div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">Define CS, fit into CL</div> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">Focus on PR, tap into BE, understand RC</div> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em;">Identify strong TR & EM</div>	<div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">Explore AS, differentiate</div> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">Focus on PR, tap into BE, understand RC</div> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em;">Extract online & offline CH of BE</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px;"> 1. CUSTOMER SEGMENT(S) CS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer segment is farmers who cannot afford hefty fees given for information about rice.</div> </td> <td style="width: 33%; padding: 5px;"> 6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer needs to have an electronic device to search and navigate through internet. The customer needs to have an image of the rice.</div> </td> <td style="width: 33%; padding: 5px;"> 5. AVAILABLE SOLUTIONS <small>PLUSES & MINUSES</small> AS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">Currently there are solutions such as searching in the web manually about our rice which does not guarantee a result.</div> </td> </tr> <tr> <td style="padding: 5px;"> 2. PROBLEMS / PAINS <small>+ ITS FREQUENCY</small> PR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">If farmer want to know about its crops, he/she will have to find an agricultural expert and pay high fees.</div> </td> <td style="padding: 5px;"> 9. PROBLEM ROOT / CAUSE RC <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The main problem is the hefty fees charges by the experts for giving information and advices.</div> </td> <td style="padding: 5px;"> 7. BEHAVIOR <small>+ ITS INTENSITY</small> BE <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer usually does not take information about the rice which affects their harvest and can result in financial losses.</div> </td> </tr> <tr> <td style="padding: 5px;"> 3. TRIGGERS TO ACT TR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer will have to pay less charge and does not have to go anywhere for getting information about its rice.</div> </td> <td style="padding: 5px;"> 10. YOUR SOLUTION SL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">To create an Ai model which can predict the variety of the rice by an image and give information about the rice and making it cost effective.</div> </td> <td style="padding: 5px;"> 8. CHANNELS of BEHAVIOR CH <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">ONLINE</div> The farmers <u>does</u> not like to spend more on getting info about the rice type and how it must be cultivated. <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-top: 5px;">OFFLINE</div> </div> </td> </tr> <tr> <td style="padding: 5px;"> 4. EMOTIONS <small>BEFORE / AFTER</small> EM <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer needs to pay high charges for every consultation which is very tiresome and brings financial constraints.</div> </td> <td colspan="2"></td> </tr> </table>		1. CUSTOMER SEGMENT(S) CS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer segment is farmers who cannot afford hefty fees given for information about rice.</div>	6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer needs to have an electronic device to search and navigate through internet. The customer needs to have an image of the rice.</div>	5. AVAILABLE SOLUTIONS <small>PLUSES & MINUSES</small> AS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">Currently there are solutions such as searching in the web manually about our rice which does not guarantee a result.</div>	2. PROBLEMS / PAINS <small>+ ITS FREQUENCY</small> PR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">If farmer want to know about its crops, he/she will have to find an agricultural expert and pay high fees.</div>	9. PROBLEM ROOT / CAUSE RC <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The main problem is the hefty fees charges by the experts for giving information and advices.</div>	7. BEHAVIOR <small>+ ITS INTENSITY</small> BE <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer usually does not take information about the rice which affects their harvest and can result in financial losses.</div>	3. TRIGGERS TO ACT TR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer will have to pay less charge and does not have to go anywhere for getting information about its rice.</div>	10. YOUR SOLUTION SL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">To create an Ai model which can predict the variety of the rice by an image and give information about the rice and making it cost effective.</div>	8. CHANNELS of BEHAVIOR CH <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">ONLINE</div> The farmers <u>does</u> not like to spend more on getting info about the rice type and how it must be cultivated. <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-top: 5px;">OFFLINE</div> </div>	4. EMOTIONS <small>BEFORE / AFTER</small> EM <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer needs to pay high charges for every consultation which is very tiresome and brings financial constraints.</div>		
1. CUSTOMER SEGMENT(S) CS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer segment is farmers who cannot afford hefty fees given for information about rice.</div>	6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer needs to have an electronic device to search and navigate through internet. The customer needs to have an image of the rice.</div>	5. AVAILABLE SOLUTIONS <small>PLUSES & MINUSES</small> AS <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">Currently there are solutions such as searching in the web manually about our rice which does not guarantee a result.</div>													
2. PROBLEMS / PAINS <small>+ ITS FREQUENCY</small> PR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">If farmer want to know about its crops, he/she will have to find an agricultural expert and pay high fees.</div>	9. PROBLEM ROOT / CAUSE RC <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The main problem is the hefty fees charges by the experts for giving information and advices.</div>	7. BEHAVIOR <small>+ ITS INTENSITY</small> BE <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The customer usually does not take information about the rice which affects their harvest and can result in financial losses.</div>													
3. TRIGGERS TO ACT TR <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer will have to pay less charge and does not have to go anywhere for getting information about its rice.</div>	10. YOUR SOLUTION SL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">To create an Ai model which can predict the variety of the rice by an image and give information about the rice and making it cost effective.</div>	8. CHANNELS of BEHAVIOR CH <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-bottom: 5px;">ONLINE</div> The farmers <u>does</u> not like to spend more on getting info about the rice type and how it must be cultivated. <div style="background-color: #f0f0f0; padding: 2px; font-size: 0.8em; margin-top: 5px;">OFFLINE</div> </div>													
4. EMOTIONS <small>BEFORE / AFTER</small> EM <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">The farmer needs to pay high charges for every consultation which is very tiresome and brings financial constraints.</div>															

Project Design Phase
Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In-Rice-Type-Classification-Through-Transfer-Learning
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S. No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	It is not possible for the farmers to pay the agriculture experts hefty fees every time they have a new produce. We have to come up with a solution to this problem
2.	Idea / Solution description	Train an AI model which can be used by farmers to check the type of rice. The users need to upload image of a rice grain and click on the submit button.
3.	Novelty / Uniqueness	The prediction will be done automatically without any human intervention using a machine learning model.
4.	Social Impact / Customer Satisfaction	The model can predict the rice in very less time and provide services to a very large customer base.
5.	Business Model (Revenue Model)	We can charge amount per prediction which can generate a good profit.
6.	Scalability of the Solution	The model can be scalable by training the model on various different types of rice.

Project Design Phase Solution Architecture

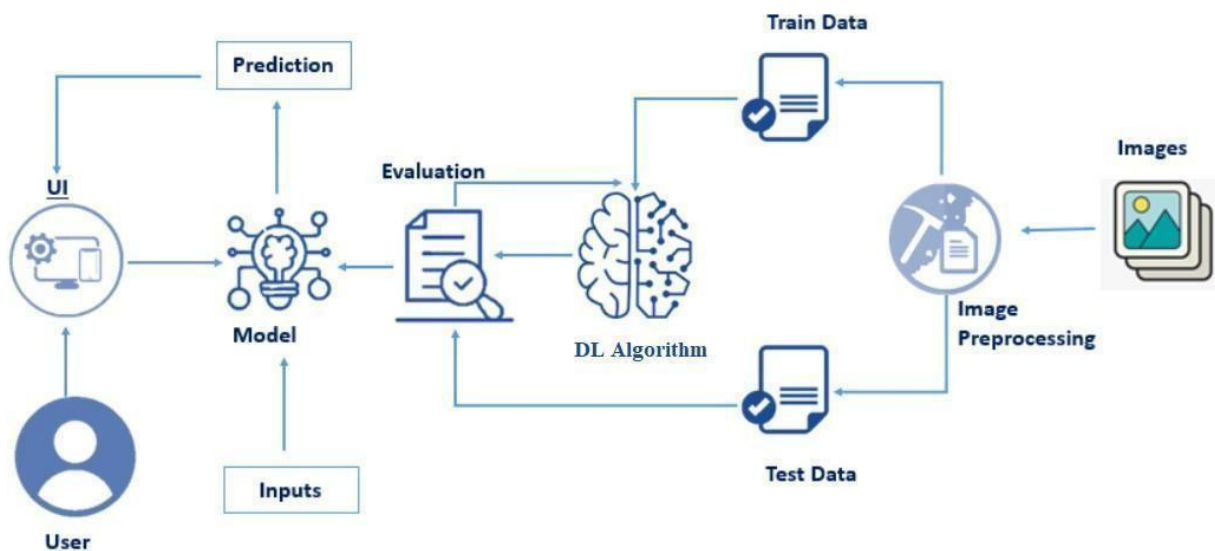
Date	15 February 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In-Rice-Type- -Through-Transfer-Learning Classification
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:



Key Components of the solution:

1. User Interface (Frontend)

Provides an interface for users to upload rice images and view classification results. Uses HTML, JavaScript, or React to send images to the backend and display predictions.

2. Backend Logic (Flask API)

Handles image preprocessing, runs inference using MobileNetV2, and returns classification results as JSON. Built with Flask/ Fast API for easy deployment.

3. MobileNetV2 (Deep Learning Model)

A lightweight CNN optimized for mobile/web, trained to classify different rice types. Uses depth wise separable convolutions for efficiency and is fine-tuned for accuracy.

4. Output (Rice Classification Result)

Returns a predicted rice category (e.g., Basmati, Jasmine) as JSON, which is displayed on the frontend. Can be integrated into web or mobile apps for real-time use.

Features and Deployment phases:

Features:

User-Friendly UI: Simple interface for image upload and displaying results.

Efficient Backend: Uses Flask/Fast API to handle requests and process images.

Accurate Predictions: MobileNetV2 ensures fast and reliable rice classification.

Deployment phases:

Model Training & Saving: Train MobileNetV2, fine-tune it, and save as .h5.

Backend & API Setup: Develop a Flask API for model inference and JSON response.

Hosting & Deployment: Deploy on Render, AWS, or Google Cloud for public access.

Solution Requirements:

1. Technical requirements:

Frameworks & Libraries: TensorFlow/ Keras for model training, Flask/Fast API for API, and React/HTML for frontend.

Infrastructure: A cloud server (AWS, GCP) or containerized deployment (Docker, Kubernetes).

Storage & Processing: GPU support for training, cloud or local storage for model files and images.

2. Functional requirements:

Image Upload & Processing: Users can upload rice images for classification.

Model Inference & Prediction: Backend processes images and returns the rice type.

Result Display & API Integration: Predictions are displayed in the UI with real-time responses.

Project Planning Logic

Date	15 February 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey In-Rice-Type- -Through-Transfer Learning Classification
Maximum Marks	-

A Sprint fixed period or duration in which a team works to complete a set of tasks

An **Epic** is a **big task or project** that is too large to complete in one sprint. It is broken down into **smaller tasks (stories)** that can be completed over multiple sprints.

A **Story** is a small task. It is part of an **Epic**.

A **Story Point** is a number that represents how much effort a story takes to complete. (usually in form of Fibonacci series)

- 1- Very Easy task
- 2- Easy task
- 3- Moderate task
- 5- Difficult task

Sprint 1: (2 Days)

Data Collection

Collection of Data **2**

Loading Data **1**

Sprint 2: (3 Days)

Data Preprocessing

Handling Missing Values **3**

Handling Categorical values **2**

Sprint 3: (5 Days)

Model Building

Model Building **5**

Testing Model **3**

Sprint 4: (3 Days)

Deployment

Working HTML Pages **3**

Flask deployment **5**

Sprint 3 (5 days)

Total Story Points

Sprint 1 = 3

Sprint 2 = 5

Sprint 3 = 8

Sprint 4 = 8

Velocity= Total Story Points Completed/ Number of Sprints

Total story Points= 3+5+8+8 =24

No of Sprints= 4

Velocity = $24/4=6$

6 (Story Points per Sprint)

Your team's velocity is 6 Story Points per Sprint.

Project Planning Phase
Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	15 February 2025
Team ID	LTVIP2025TMID45731
Project Name	GrainPalette-A-Deep-Learning-Odyssey-In-Rice-Type-Classification-Through-Transfer-Learning
Maximum Marks	5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Visiting website	USN-1	As a user, I can visit the site simply using website URL.	2	High	Kabir
Sprint-2	Accessing upload page	USN-2	To use the model for prediction, I need to go to image upload page.	1	High	Kushagra Singh
Sprint-3	Image uploading	USN-3	In the Image upload page, I can simply upload the image from my device files.	2	Low	Rishi Pal
Sprint-4	Rice type prediction	USN-4	After uploading the image, I get the rice type prediction and addition information related to farming of that particular rice variety.	2	Medium	Kishan Kumar Sharma

Project Tracker, Velocity & Burndown Chart: (4 Marks)

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	2 Days	25 Feb 2025	26 Feb 2025	20	10 Mar 2025
Sprint-2	20	3 Days	27 Feb 2025	01 Mar 2025	20	10 Mar 2025
Sprint-3	20	5 Days	02 Mar 2025	06 Mar 2025	20	10 Mar 2025
Sprint-4	20	3 Days	07 Mar 2025	09 Mar 2025	20	10 Mar 2025

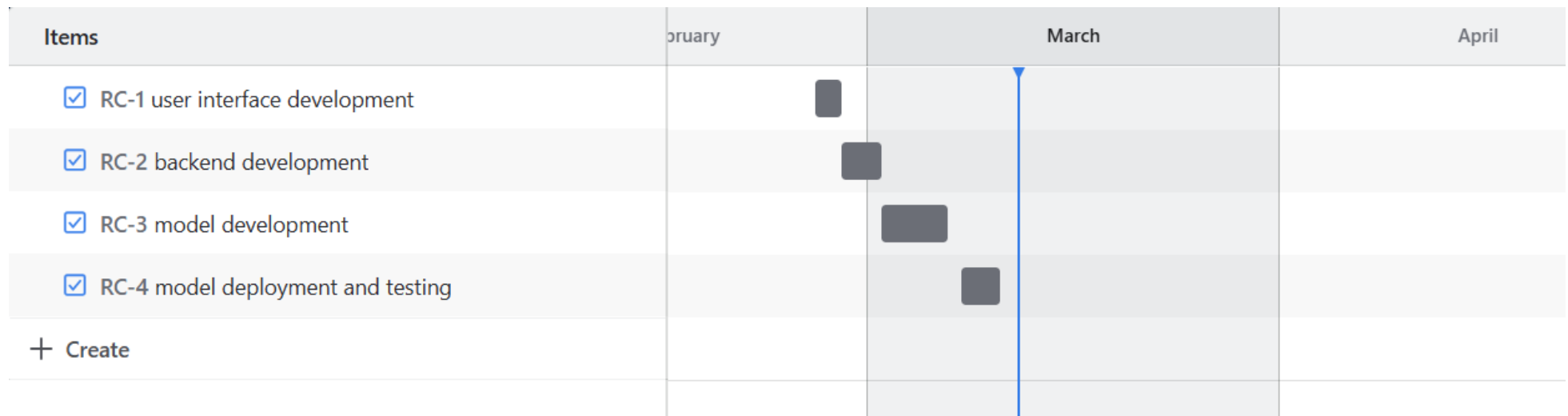
Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = (\text{sprint duration}) / \text{Velocity} = 10 / 20 = 0.5$$

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



<https://www.visual-paradigm.com/scrum/scrum-burndown-chart/>

<https://www.atlassian.com/agile/tutorials/burndown-charts>

Reference:

<https://www.atlassian.com/agile/project-management>


<https://www.atlassian.com/agile/tutorials/how-to-do-scrum-with-jira-software>

<https://www.atlassian.com/agile/tutorials/epics>

<https://www.atlassian.com/agile/tutorials/sprints>

<https://www.atlassian.com/agile/project-management/estimation>

<https://www.atlassian.com/agile/tutorials/burndown-charts>

<div>  <p>Scenario: Upload image of any type of rice, processing and see results of what type of rice it is.</p> </div>	<div>  <p>Entice How does someone become aware of this service?</p> </div>	<div>  <p>Enter What do people experience as they begin the process?</p> </div>	<div>  <p>Engage In the core moments in the process, what happens?</p> </div>	<div>  <p>Exit What do people typically experience as the process finishes?</p> </div>	<div>  <p>Extend What happens after the experience is over?</p> </div>
<div>  <p>Experience steps What does the person (or people) at the center of this scenario typically experience in each step?</p> </div>	<div> <div>Potential users discover GrainPalette through social media ads, agricultural forums, and industry conferences.</div> <div>Positive reviews and testimonials from farmers and agricultural experts build curiosity.</div> <div>A compelling value proposition, such as "Accurate Rice Classification in Seconds," grabs attention.</div> </div>	<div> <div>Users are welcomed with a simple onboarding process explaining the app's purpose.</div> <div>A guided tutorial demonstrates how to upload rice grain images for classification.</div> </div>	<div> <div>Users upload images of rice grains through the app's camera or file upload feature.</div> <div>The deep learning model quickly processes the images and provides classification results.</div> <div>The app suggests insights such as grain quality, type, and potential market value.</div> <div>Real-time feedback allows users to refine their inputs for better accuracy.</div> <div>User satisfaction grows as the app's high accuracy saves time and effort.</div> </div>	<div> <div>The app displays a summary report of the classification results.</div> <div>Users receive recommendations for improving rice quality and market positioning.</div> </div>	<div> <div>Users receive periodic updates and new features via notifications.</div> <div>Feedback channels allow users to report issues and suggest improvements.</div> <div>Data from past classifications helps improve future accuracy through machine learning.</div> </div>
<div>  <p>Interactions What interactions do they have at each step along the way?</p> <ul style="list-style-type: none"> People: Who do they see or talk to? Places: Where are they? Things: What digital touchpoints or physical objects do they use? </div>	<div> <div>Users may see promotional content from social media influencers, agricultural experts, or industry leaders.</div> <div>They encounter GrainPalette through online ads, agricultural fairs, and farming seminars.</div> <div>They interact with social media platforms (e.g., Facebook, Instagram), the GrainPalette website, and online video demos.</div> </div>	<div> <div>Users interact with customer support through chat or FAQs during onboarding.</div> <div>They are usually at home, on the farm, or in agricultural offices while setting up the app.</div> </div>	<div> <div>Users may seek guidance from customer support or other farmers when using the app.</div> <div>They are typically in rice fields, warehouses, or grain processing centers during use.</div> <div>They use smartphone cameras to capture rice images and the app's interface to process them.</div> <div>Some users might consult experts or team members to validate results.</div> <div>Real-time feedback through the app's dashboard enhances user interaction.</div> </div>	<div> <div>Users may share their results with agricultural experts or other farmers.</div> <div>They are usually back at home or in their office while reviewing reports.</div> </div>	<div> <div>Users receive follow-ups from the GrainPalette team through emails or notifications.</div> <div>They might discuss app performance and results with industry peers at events or meetings.</div> <div>Push notifications inform users about app updates and new features.</div> </div>
<div>  <p>Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")</p> </div>	<div> <div>"Help me find a reliable solution for rice classification."</div> <div>"Help me improve the efficiency of sorting rice grains."</div> <div>"Help me reduce errors in rice type identification."</div> </div>	<div> <div>"Help me understand how to use the app quickly and easily."</div> <div>"Help me avoid confusion during the onboarding process."</div> </div>	<div> <div>"Help me classify rice types accurately and quickly."</div> <div>"Help me understand the differences between rice varieties."</div> <div>"Help me make informed decisions based on classification results."</div> <div>"Help me avoid misclassifications that could affect quality and pricing."</div> <div>1. "Help me improve efficiency and reduce labor costs."</div> </div>	<div> <div>"Help me understand the classification report clearly."</div> <div>"Help me apply the insights to improve rice quality and sales."</div> </div>	<div> <div>"Help me stay updated with app improvements and new features."</div> <div>"Help me track classification accuracy over time."</div> <div>"Help me compare past and present classification trends."</div> </div>
<div>  <p>Positive moments What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?</p> </div>	<div> <div>Discovering that GrainPalette can automate and simplify rice classification is exciting.</div> <div>Positive testimonials and high ratings build motivation to try the app.</div> <div>Seeing a demo of quick and accurate rice classification feels impressive and promising.</div> </div>	<div> <div>A smooth and quick onboarding process feels easy and welcoming.</div> <div>Successfully uploading the first image without issues creates confidence.</div> </div>	<div> <div>Getting fast and accurate results from the deep learning model feels satisfying.</div> <div>Seeing detailed insights about rice quality and type boosts confidence.</div> <div>Real-time feedback and improvement suggestions feel empowering.</div> <div>High accuracy rates make the process feel productive and rewarding.</div> <div>The ability to compare different rice types side-by-side adds an element of curiosity and learning.</div> </div>	<div> <div>Viewing a detailed and well-organized classification report feels informative and useful.</div> <div>Being able to share or export the results with one click feels seamless.</div> </div>	<div> <div>Receiving helpful tips and updates through notifications feels engaging.</div> <div>Tracking classification history and trends over time builds a sense of progress.</div> <div>Seeing improvements in classification accuracy over repeated use feels rewarding.</div> </div>
<div>  <p>Negative moments What steps does a typical person find frustrating, confusing, angering, costly, or time-consuming?</p> </div>	<div> <div>Difficulty finding reliable information about the app online creates frustration.</div> <div>Confusing or inconsistent marketing messages reduce trust and interest.</div> <div>Lack of clear pricing or hidden costs can make users feel hesitant.</div> </div>	<div> <div>A complicated or lengthy onboarding process can discourage users.</div> <div>Poor internet connectivity causing delays during setup creates annoyance.</div> </div>	<div> <div>Inaccurate classification results can frustrate and discourage users.</div> <div>Slow processing times during image analysis can waste time.</div> <div>Poor camera integration or image quality issues may lead to failed classification.</div> <div>Lack of detailed insights or explanations about the classification process may confuse users.</div> <div>Receiving inconsistent results from similar images reduces confidence in the app's accuracy.</div> </div>	<div> <div>Confusing report formats make it hard to understand the results.</div> <div>Difficulties in exporting or sharing results can create frustration.</div> </div>	<div> <div>Frequent or irrelevant push notifications may feel intrusive.</div> <div>Poor customer support when seeking clarification reduces trust.</div> <div>Data loss or unavailability of previous reports can anger users.</div> </div>
<div>  <p>Areas of opportunity How might we make each step better? What ideas do we have? What have others suggested?</p> </div>	<div> <div>Improve visibility by partnering with agricultural organizations and influencers.</div> <div>Create targeted social media campaigns to reach farmers and agribusinesses directly.</div> <div>Develop a series of short, clear demo videos to explain the app's benefits.</div> </div>	<div> <div>Introduce a step-by-step onboarding wizard to simplify the setup process.</div> <div>Improve UI/UX design for better navigation and faster understanding of features.</div> </div>	<div> <div>Enhance the image recognition model to improve accuracy and reduce processing time.</div> <div>Introduce a progress bar to show how long the classification will take.</div> <div>Provide detailed insights about classification criteria to increase user understanding.</div> <div>Allow users to compare classification results side-by-side for better decision-making.</div> <div>Offer an offline mode for areas with poor internet connectivity.</div> </div>	<div> <div>Provide a clear summary of classification results with actionable insights.</div> <div>Improve report formatting to make data easier to interpret and share.</div> </div>	<div> <div>Send personalized notifications about app updates and new features.</div> <div>Allow users to track classification history and trends over time.</div> <div>Use machine learning to improve classification accuracy based on user feedback.</div> </div>

Project Design Phase-II Data Flow Diagram & User Stories

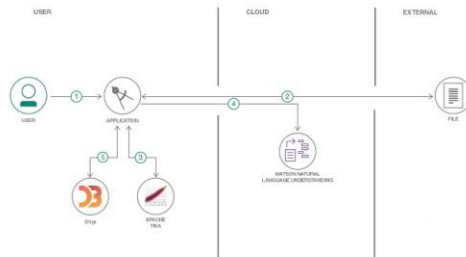
Date	31 January 2025
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In-Rice Type-Through-Transfer-Learning Classification
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

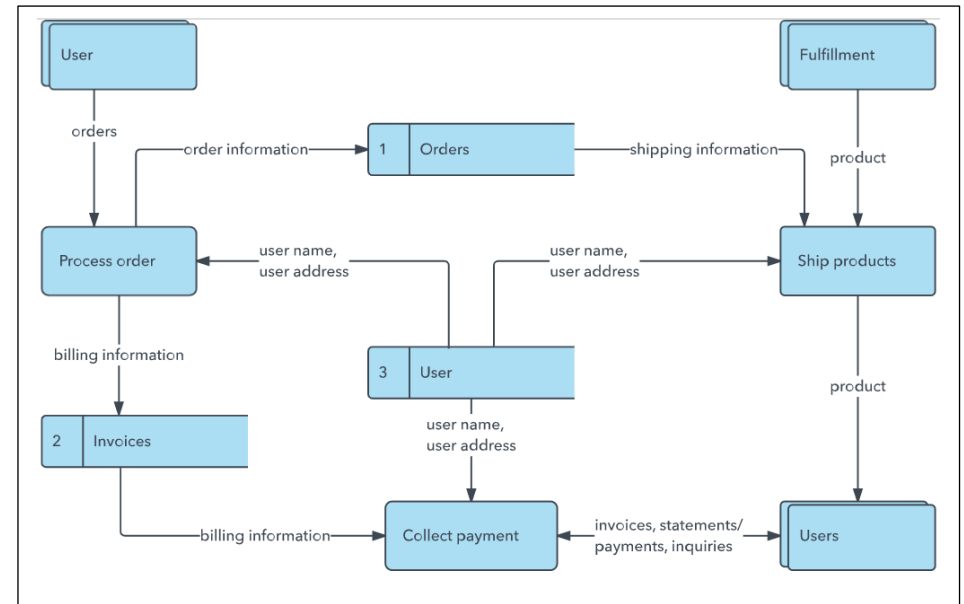
Example: (Simplified)

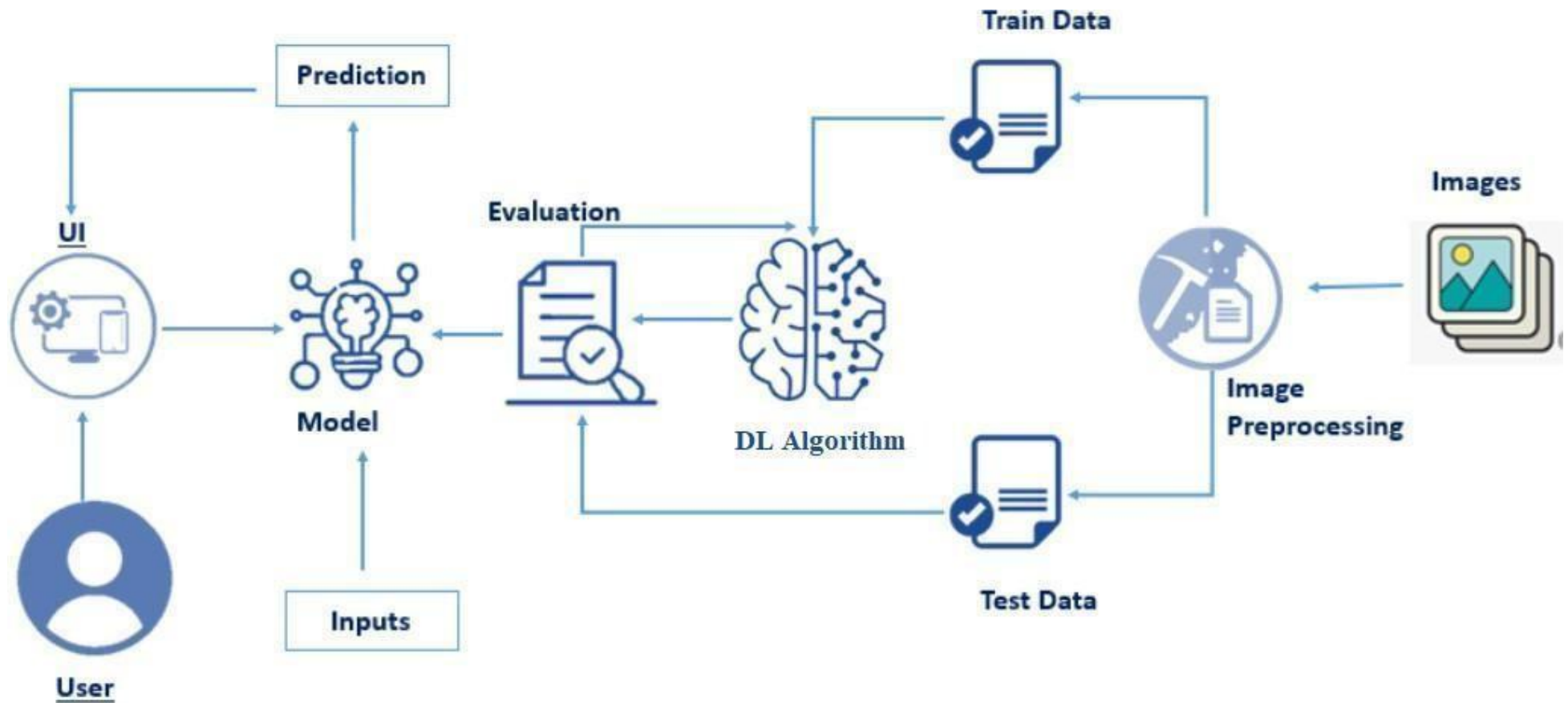
Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.

Example: DFD Level 0 (Industry Standard)





User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Browsing	USN-1	As a user, I first need to browse through the url to go to the website.	I can use any browsing platform to go to through the url.	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
	upload	USN-2	As a user, I will have to upload the image for the model to predict.	Image must be uploaded in the correct place.	Medium	Sprint-2
	Processing and prediction	USN-3	After uploading the image, the model processes the image and give result based on the image.	The model gives prediction based on the image.	Medium	Sprint-3
	results	USN-4	As a user, I can review the related information with the uploaded rice type image.	The result must be displayed.	High	Sprint-4

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	31 January 2025
Team ID	LTVIP2025TMID45731
Project Name	GrainPalette-A-Deep-Learning-Odyssey-In-Rice-Type-Classification-Through-Transfer-Learning
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Browsing through URL	website link
FR-2	Get Image	Upload the image
FR-3	Prediction	Machine learning model
FR-4	Details	View the details based on prediction

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system should have an intuitive, user-friendly interface with clear instructions.
NFR-2	Reliability	The prediction must be correct and accurate.
NFR-3	Performance	The model must not take much time to predict.
NFR-4	Availability	The availability to everyone must be maintained.
NFR-5	Scalability	It must be scalable for predicting other types of rice too.

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	31 January 3035
Team ID	LTVIP2025TMID45731
Project Name	Grain Palette-A-Deep-Learning-Odyssey-In-Rice-Type- -Through-Transfer-Learning Classification
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Rice Type Classification:

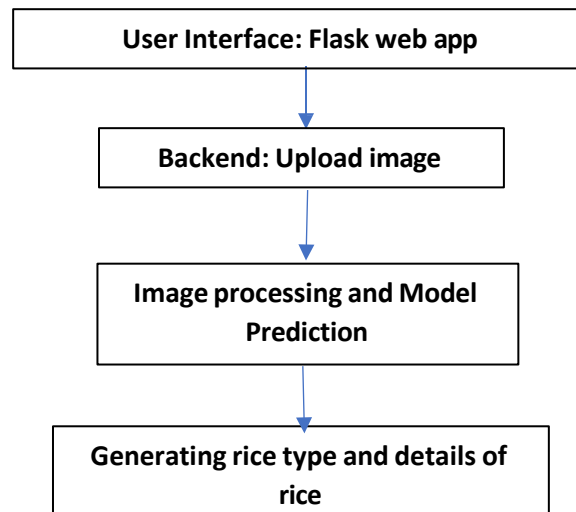


Table-1: Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	The user interacts with the application via a web interface.	Flask, HTML, CSS
2.	Application Logic-1	Handles user input and processes it for Image prediction.	Python
3.	Application Logic-2	Predicts the Image	MobilenetV2, python
4.	Database	If data storage is required	MySQL
5.	File Storage	Use internal storage to upload the image	Flask
6.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
7.	Machine Learning Model	Predicts the Image	Image classification
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System	Flask

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	MobilenetV2, Flask, Python
2.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Parallel processing (if required)
3.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Flask
4.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	MobilenetV2

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>