Ideation Phase
Brainstorm & Idea Prioritization Template

Date	28 June 2025
Team ID	LTVIP2025TMID41808
Project Name	Grainpalette - a deep learning odyssey in rice type classification through transfer learning
Maximum Marks	4 Marks

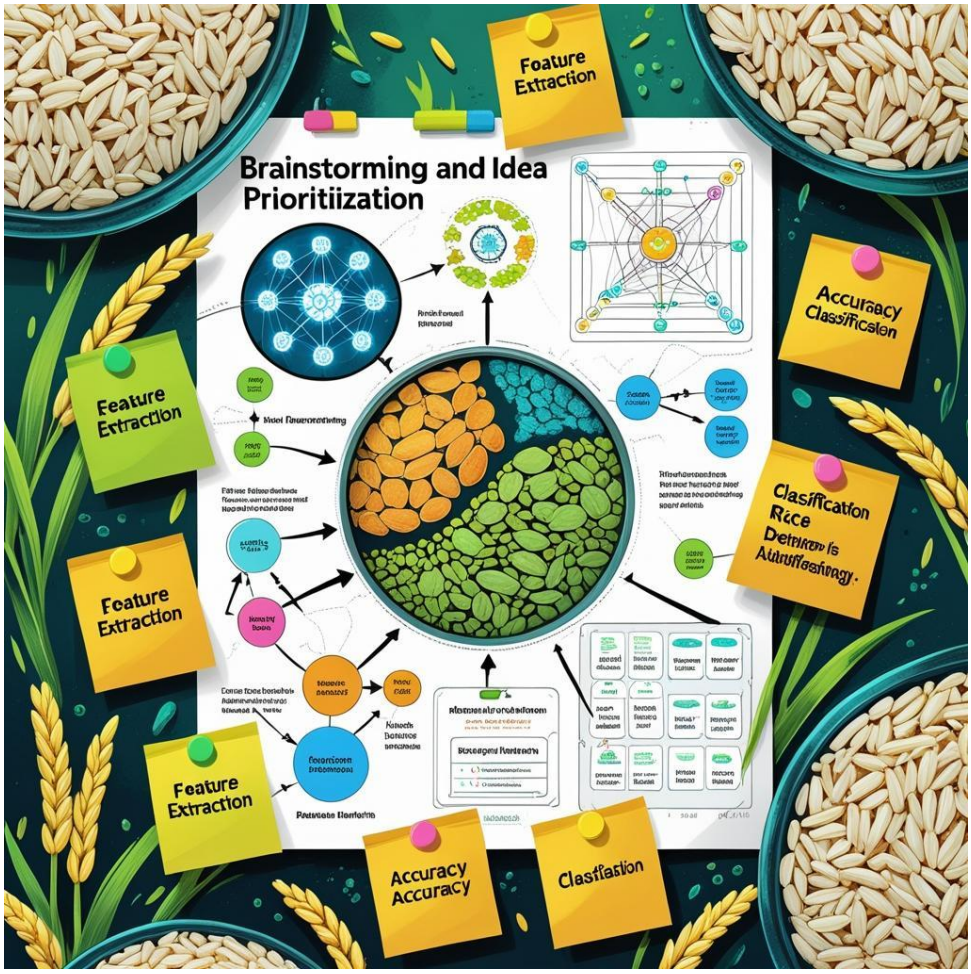
Brainstorm & Idea Prioritization Template:

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.

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

During our team discussions, we identified a significant gap in the agricultural domain—the lack of automated systems for rice grain classification. The current process relies heavily on manual visual inspection, which is not only time-consuming but also highly inconsistent and error-prone.

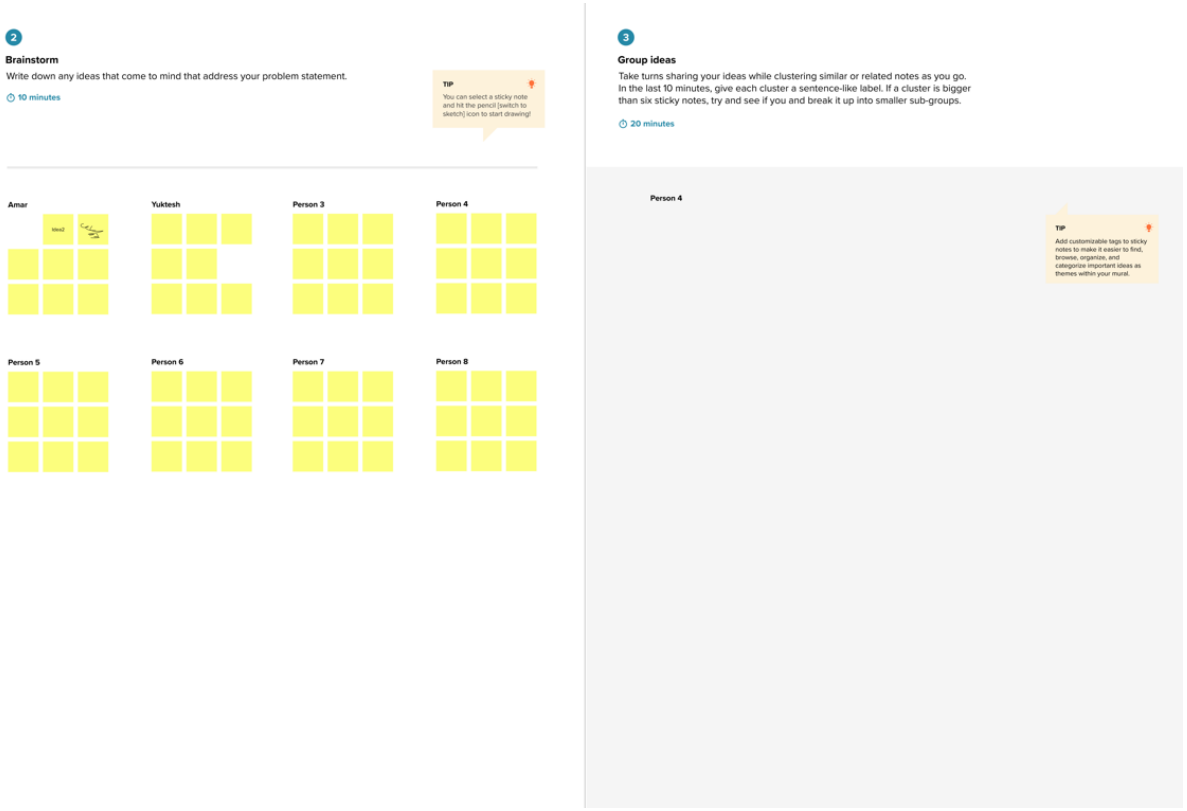
🔍 **Problem Statement Selected:**
There is no efficient, image-based system available to classify rice grain varieties automatically, resulting in delayed quality assessment and potential inconsistencies in the grading process.



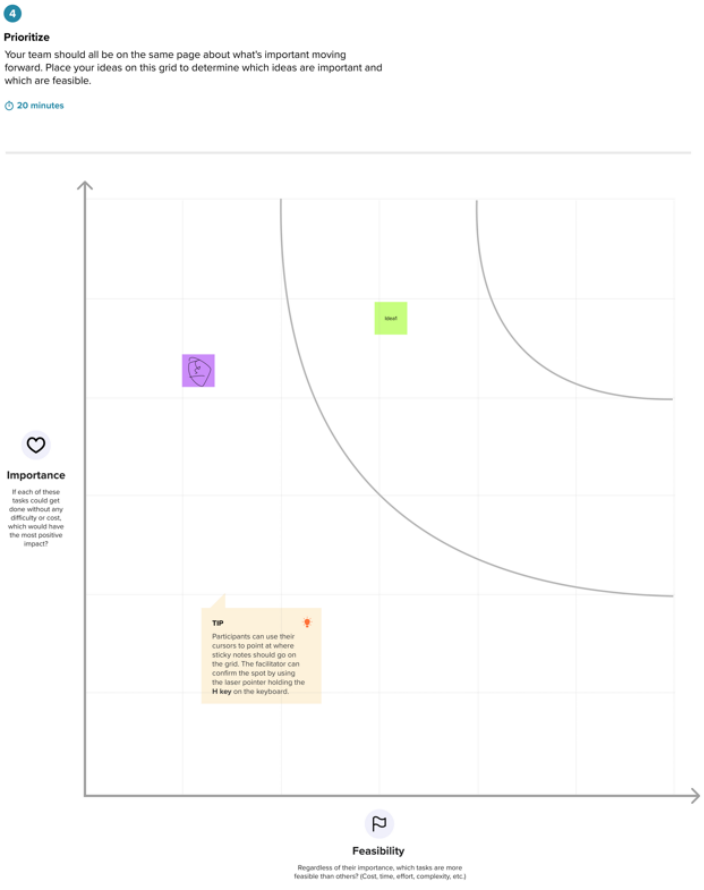
Step-2: Brainstorming, Idea Listing, and Grouping

💡 Idea	🗂 Group / Category
Utilize transfer learning with pretrained CNN models	Model Development
Source and preprocess rice grain datasets from Kaggle	Data Collection and Preparation
Develop a user-friendly interface using Streamlit	Frontend / Deployment
Apply image augmentation techniques to improve model accuracy	Model Optimization
Evaluate results using standard classification metrics	Testing and Validation

nstorm, Idea Listing and Grouping



Step-3: Idea Prioritization



Ideation Phase
Define the Problem Statements

Date	28 JUNE 2025
Team ID	LTVIP2025TMID41808
Project Name	Grainpalette - a deep learning odyssey in rice type classification through transfer learning
Maximum Marks	2 Marks

◈ Problem Statement 1

I am a **rice quality control inspector** in a grain processing facility.
I'm trying to **accurately classify rice grain types** with minimal effort.
But the current method **relies heavily on manual visual inspection**.
Because there is **no AI-powered solution integrated into the workflow**.
Which makes me feel **concerned about accuracy and under pressure to maintain speed**.

◈ Problem Statement 2

I am a **developer working on agri-tech automation tools**.
I'm trying to **build a deep learning solution for rice grain classification**.
But I face challenges due to **limited labeled datasets and domain-specific models**.
Because **most public models are not tailored to agricultural applications**.
Which makes me feel **motivated but constrained by technical limitations**.

Example:

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

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	rice quality inspector at a grain processing plant.	classify rice grain types accurately and consistently	I still rely on manual inspection which is slow and error-prone.	there is no intelligent automated classification system available.	concerned about accuracy and under constant pressure to maintain quality standards.
PS-2	a machine learning developer working on agricultural automation tools	build an accurate and reliable rice grain classification model using deep learning	I face challenges due to the lack of ready-to-use, domain-specific datasets and pretrained models	most open-source AI models are not tailored for grain-level image classification	motivated to innovate, but limited by the resources and data availability in the domain

Ideation Phase
Empathize & Discover

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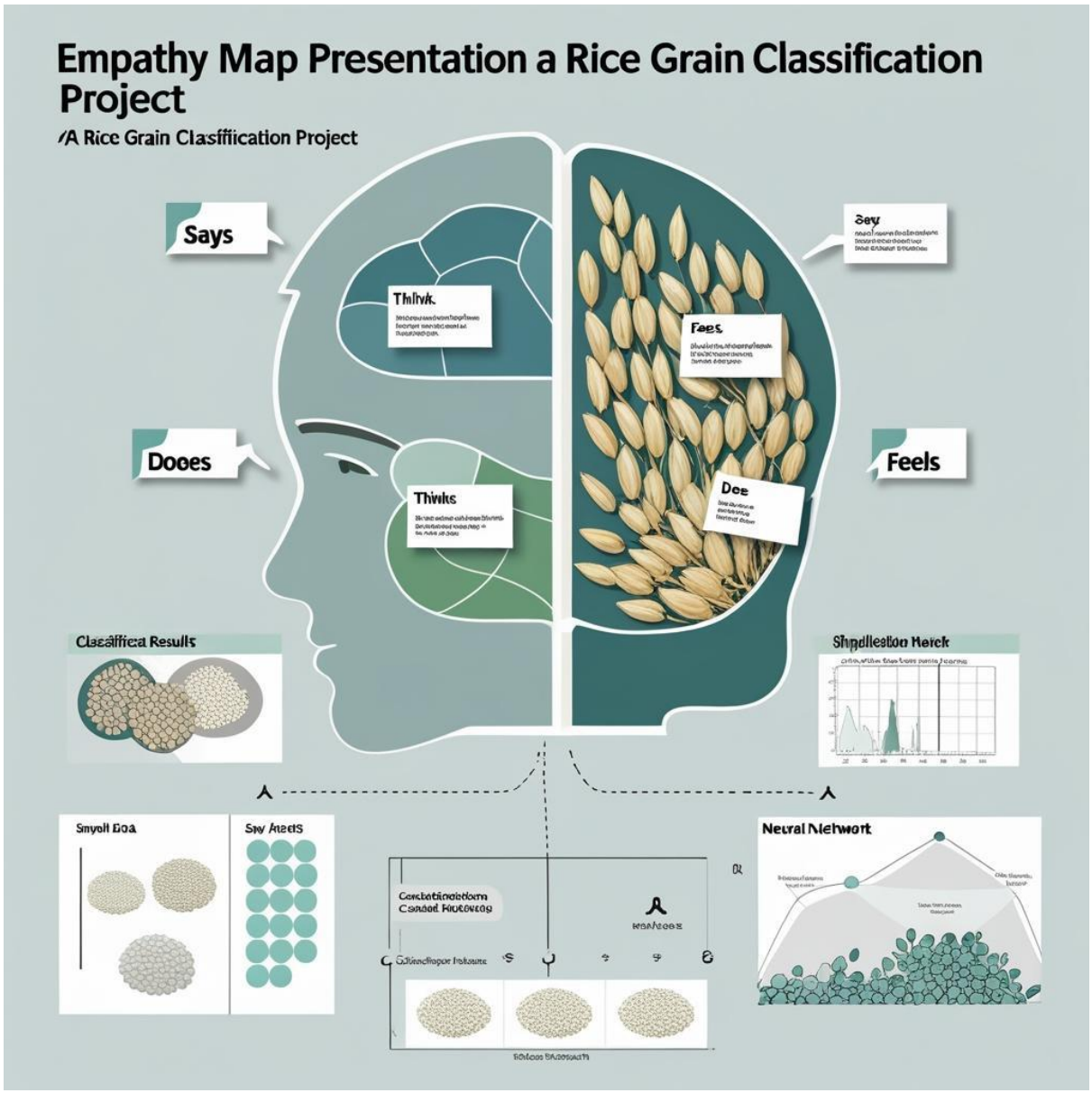
Maximum Marks	4 Marks

Empathy Map for Grain Quality Analysts and Inspectors

- **WHO are we empathizing with?**
  → Rice quality inspectors, food packaging supervisors, and agricultural researchers.
- **What do they need to do?**
  → Quickly and accurately classify different rice grain types for quality assurance and sorting.
- **What do they see?**
  → Repetitive manual inspection tasks, slight visual differences among rice grains, and the risk of inconsistency.
- **What do they say?**
  → "It's hard to maintain accuracy every time."
  → "A smart automated solution would make this easier."
- **What do they do?**
  → Manually examine rice grains, compare them with known samples, and record results using spreadsheets or physical logs.
- **What do they hear?**
  → Feedback from supervisors on classification errors, customer quality complaints, and the growing demand for automation in agri-tech.
- **What do they think and feel?**
  → Anxious about meeting quality standards, concerned about fatigue-induced errors, and hopeful that AI-based tools can reduce their burden.

Example:


Empathy Map Presentation a Rice Grain Classification Project
Says
Thinks
Does
Feels
Thinks
Feels
Doe