Project Design Phase
Problem – Solution Fit Template

Date	28 June 2025
Team ID	LTVIP2025TMID40189
Project Name	GrainPalette - A Deep Learning Odyssey In Rice Type Classification Through Transfer Learning
Maximum Marks	2 Marks

Problem – Solution Fit Template:

Farmers, agriculture researchers, and home gardeners often struggle to **accurately identify rice grain types**, especially when dealing with local seed varieties, new hybrid strains, or visually similar grains. This leads to:

- **Ineffective cultivation strategies** (incorrect watering, fertilization, or pest control).
- **Inconsistent yields and crop performance** due to unknown rice variety characteristics.
- **Manual and time-consuming identification** methods that require expert knowledge.
- **Limited access to expert analysis**, particularly in rural or remote areas.

The Solution: GrainPalette AI Model

GrainPalette offers an AI-driven solution using **Convolutional Neural Networks (CNN)** with **MobileNetV4-based transfer learning** to identify rice grain types from uploaded images with high accuracy and speed.

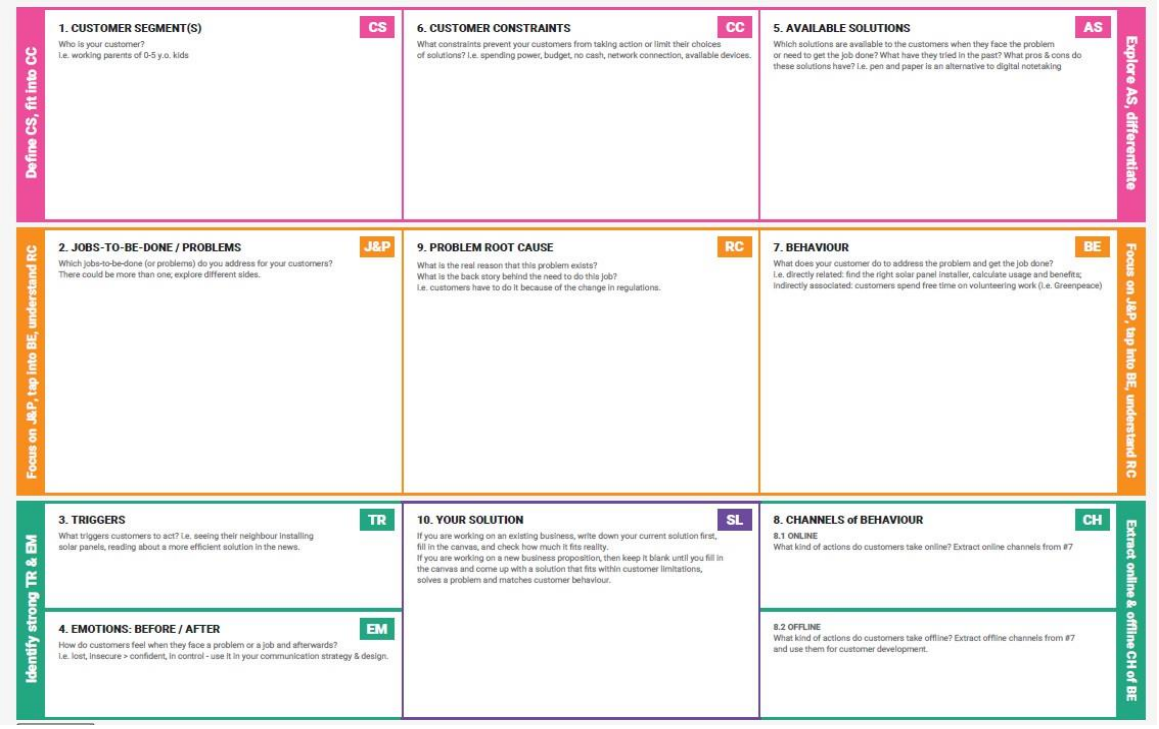
With just a photo of a rice grain, the system:

- Predicts the rice variety instantly.
- Recommends relevant cultivation practices.
- Empowers users with real-time insights — no expert required.

Purpose:

Objective	**Fit with GrainPalette**
✅ Solve complex problems based on customer context	Farmers and agri-scientists need reliable, on-the-spot grain type identification to make informed decisions. GrainPalette meets this need without requiring technical expertise.
✅ Accelerate solution adoption	Mobile/web platform with fast predictions taps into farmers' increasing access to smartphones and growing comfort with tech-based solutions.
✅ Sharpen communication strategy	Messaging like "Know your seed before you sow" or "AI-powered rice classification" appeals directly to pain points like guesswork in seed use.
✅ Increase engagement with touchpoints	Each upload = an interaction. This builds trust and usage habits, while helping collect real-time agri data.
✅ Understand and improve user environment	By identifying commonly misclassified or misunderstood rice types, the system improves agricultural planning and extension services.

Template:



References:

1. https://www.ideahackers.network/problem-solution-fit-canvas/
2. https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe