Project Design Phase
Proposed Solution

Date	27 June 2025
Team ID	LTVIP2025TMID41438
Project Name	GrainPalette – A Deep Learning Odyssey in Rice Type Classification Through Transfer Learning
Maximum Marks	2 Marks

Proposed Solution :

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Identifying rice grain types manually is time-consuming and error-prone. Farmers, researchers, and gardeners need a reliable, quick, and accessible method to identify rice varieties for better crop planning, research, and educational purposes.
2.	Idea / Solution description	The solution involves a deep learning-based web tool that classifies rice types from uploaded grain images using transfer learning (MobileNetv4). The model predicts the rice type, supporting decisions regarding irrigation, fertilization, and cultivation suited for each variety.
3.	Novelty / Uniqueness	Unlike manual classification, this system offers an automated, scalable, and real-time rice type identification method using advanced CNNs. It leverages pre-trained models for higher accuracy and reduced training time. It's accessible via browser, needing no specialized hardware.
4.	Social Impact / Customer Satisfaction	Enables farmers to make informed crop decisions, researchers to support field studies, and gardeners to explore rice biodiversity. It empowers users with accurate, quick classifications, improving agricultural practices and educational awareness in both rural and urban contexts.
5.	Business Model (Revenue Model)	The tool can be offered as a freemium service to individuals, with subscription-based plans for agricultural institutions and research bodies. Custom APIs and integrations with agricultural platforms could provide additional revenue streams.
6.	Scalability of the Solution	The system is scalable for additional rice varieties or other crops. Cloud deployment allows global access with mobile devices for real-time, field-level application.