Project Design Phase
Proposed Solution Template

Date	28 June 2025
Team ID	LTVIP2025TMID40305
Project Name	GrainPalette - 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)	Farmers and suppliers face difficulty in accurately identifying and classifying different types of rice grains, leading to quality issues and reduced market value. Manual classification is time-consuming and error-prone.
2.	Idea / Solution description	Our project "GrainPalette" uses deep learning and transfer learning techniques to automatically classify rice grain types from images with high accuracy. By training a Convolutional Neural Network (CNN) on pre-trained models like ResNet or MobileNet, we provide a fast, automated, and cost-effective rice type detection system.
3.	Novelty / Uniqueness	The solution leverages transfer learning, reducing the need for large datasets and training time. It offers real-time classification with high precision and can be deployed as a mobile or web app for field use by farmers, millers, and traders.
4.	Social Impact / Customer Satisfaction	Helps farmers and traders get fair pricing by ensuring correct classification of rice. Reduces human error, saves time, and promotes trust in supply chains. Enhances customer satisfaction in retail and export industries by guaranteeing product quality.
5.	Business Model (Revenue Model)	The solution can be offered as a subscription-based mobile app, a SaaS (Software as a Service) platform for traders and rice mills, or per-scan charges for small users. Future revenue can also come from data analytics services for agricultural stakeholders
6.	Scalability of the Solution	The model can be scaled to classify other types of grains, pulses, or even agricultural produce. It can be deployed in multiple regions and integrated with e-commerce or export platforms for broader adoption.