

## 4.2 Proposed Solution

Date	30 June 2025
Team ID	LTVIP2025TMID34162
Project Name	GrainPalette – A Deep Learning Odyssey in Rice Type Classification Through Transfer Learning
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Farmers and agricultural researchers face challenges in quickly and accurately identifying rice grain varieties. Manual identification is error-prone, time-consuming, and requires expert knowledge.
2.	Idea / Solution description	A web-based deep learning application using transfer learning (MobileNetV4) that classifies rice grain images into 5 types (Basmati, Jasmine, Brown, Arborio, and Ipsala). Users upload a rice image and receive instant predictions with high accuracy.
3.	Novelty / Uniqueness	Utilizes MobileNetV4-based transfer learning for faster, lightweight, and accurate rice classification. Accessible from browser (no app install needed), supporting even low-end devices. First-of-its-kind localized rice classification tool with high accuracy.
4.	Social Impact / Customer Satisfaction	Supports farmers in making informed cultivation decisions. Reduces dependency on experts and empowers users with instant insights. Increases productivity and promotes digital agriculture practices.
5.	Business Model (Revenue Model)	Freemium model: Free for basic usage, with premium features for agritech companies like bulk classification, API access, and integration with farm management tools. Potential partnerships with agri-research institutes.
6.	Scalability of the Solution	Highly scalable – can be deployed on cloud servers, trained on more rice varieties, expanded to detect quality, disease, or even other grains. Multilingual interface can cater to farmers across regions.