Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	27 June 2025
Team ID	LTVIP2025TMID41438
Project Name	GrainPalette – A Deep Learning Odyssey in Rice Type Classification Through Transfer Learning
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Upload Rice Grain Image	Upload an image of a rice grain via web interface
FR-2	Model Training	Train classification model using CNN with transfer learning (MobileNetv4)
FR-3	Prediction Output	Predict rice grain type from input image
FR-4	Model Evaluation	Display Accuracy, F1-Score, Confusion Matrix for each model

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	User-friendly interface via Streamlit/Flask for farmers and researchers
NFR-2	**Security**	Dataset used locally; No external data exposure (safe in ofline or cloud-secured environments)
NFR-3	**Reliability**	Trained with multiple models; outputs cross-verified using metrics
NFR-4	**Performance**	Efficient image preprocessing and real-time prediction using MobileNetv4
NFR-5	**Availability**	Deployed on Google Colab or cloud, accessible anytime
NFR-6	**Scalability**	Extendable with additional rice varieties and REST API support