Ideation Phase
Grainpalette disclosure statement

Date	30/06/ 2025
Team ID	LTVIP2025TMID38653
Project Name	GrainPalette
Maximum Marks	4 Marks

GrainPalette – Project Statement & Process Flow

GrainPalette is an AI-based solution designed to classify different rice grain types using image recognition and deep learning. This project uses Transfer Learning to enhance accuracy and reduce training time, making it efficient and accessible for agricultural stakeholders.

Step 1: Problem Identification & Objective Setting

Recognized the need for an automated rice grain classification system.

Defined objectives: Build a model to classify rice grain types accurately using

Step 2: Dataset Collection & Preprocessing

Used public rice image datasets (e.g., Rice Leaf Disease dataset or self-curated rice grain dataset).

Preprocessed images (resize, normalization, augmentation) for model compatibility

Model Building Using Transfer Learning

Chose a pre-trained CNN model (e.g., MobileNetV2, ResNet50).

Customized the top layers for rice classification (Dense, Dropout, Softmax).

Trained the model on the rice dataset with validation split.

Step 4: Evaluation and Optimization

Evaluated using metrics like accuracy, precision, recall, and F1-score.

Performed fine-tuning and hyperparameter optimization for improved performance

Step 5: Deployment & User Interface

Built a Streamlit or Flask web app.

Interface allows users to upload rice grain images and receive predictions.

Display of predicted rice type with confidence score.Step 6: Testing & Feedback

Tested the app across devices for functionality and performance.

Collected user feedback to identify improvements.

Step 7: Documentation & Reporting

Documented the entire process, including model summary, accuracy graphs, and confusion matrix.

Prepared project report, source code repository, and demonstration video (if required).