

Project Design Phase  
Solution Architecture

Date	30/06/2025
Team ID	LTVIP2025TMID38674
Project Name	grainpalette
Maximum Marks	4 Marks

Solution Architecture:

1.Data Layer

Data Source: A curated dataset of rice grain images categorized by type (e.g., Basmati, Jasmine, Sona Masoori, etc.).

Data Collection Methods:

Manually clicked grain images

Open-source datasets or image scraping

Preprocessing:

Image resizing (e.g., 224×224 pixels)

Normalization

Data augmentation (rotation, flip, zoom)

2. .Model Layer

Transfer Learning Approach:

Pre-trained CNN models like ResNet50, VGG16, or MobileNetV2

Model Customization:

Remove final dense layers of pre-trained model

Add custom layers for rice classification (Softmax with N classes)

Training Frameworks:TensorFlow / Keras or PyTorchOptimization Techniques:Adam optimizer, learning rate scheduler, dropout for

Example:

