

Project Design Phase Solution Architecture

Date	22 Feb 2026
Team ID	LTVIP2026TMIDS34436
Project Name	Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables
Maximum Marks	4 Marks

Goal

Bridge real-world spoilage detection challenges with a lightweight, accessible AI solution using transfer learning.

Core Components

- **Model:** MobileNetV2 + Transfer Learning for classifying fruits/vegetables as *Fresh* or *Rotten* with confidence scores.
- **Frontend:** Simple mobile/web UI for image capture or upload.
- **Backend:** Flask-based API for inference; real-time result delivery.
- **Deployment:** Optimized for low-resource devices, with offline support.

System Flow

1. User captures or uploads image.
2. Image is preprocessed and fed to the trained model.
3. Model predicts class + confidence.
4. Result is displayed instantly to the user.

Development Phases

- Data collection & preprocessing
- Model training & optimization
- UI design for accessibility
- Testing, deployment, and user onboarding

Technical & Business Requirements

- Mobile-first and rural-friendly
- Scalable for farms, vendors, and markets
- Minimal setup, intuitive UX
- Supports inconsistent internet access

Example - Solution Architecture Diagram:

