**Project Design Phase**

**Solution Architecture**

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| Date | 14 February 2026 |
| Team ID | LTVIP2026TMIDS54378 |
| 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:**

