Project Design Phase
Solution Architecture

Date	26 June 2025
Team ID	LTVIP2025TMID38828
Project Name	Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture in our project serves as the blueprint that connects the **real-world problem of detecting spoiled produce** with a robust **AI-based web application**. It ensures that technology effectively solves our users' challenges (vendors, consumers, retailers) while being **scalable, reliable, and easy to use.**

Goals in Our Context

- Identify the optimal AI and web technologies (Flask, TensorFlow, Transfer Learning) to solve the problem of fruit/vegetable spoilage detection.
- **Describe the system structure:** including how data flows between the UI, model, and backend.
- **Define core features:** Image upload, VGG16-based classification, confidence score, "Good to Eat"/"Don't Eat" output, and feedback system.
- Specify system behavior and how components (model, UI, user feedback, storage) interact during predictions and learning.

Key Components

- **Frontend:** HTML + CSS (Jinja templates via Flask)
- **Backend:** Flask API in Python, with TensorFlow/Keras for model inference
- **Model:** Transfer Learning with VGG16 trained on 28-class fruit/vegetable dataset
- **Storage:** Static folder (for images), JSON (for feedback), optional DB integration
- **User Roles:** Vendors, consumers, QA staff
- **Hosting Environment:** Anaconda environment (local); scalable to cloud later

Solution Architecture Diagram: