**Project Design Phase**

**Solution Architecture**

|  |  |
| --- | --- |
| Date | 25 June 2025 |
| Team ID | LTVIP2025TMID32541 |
| 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:**

