**Project Design Phase**

**Proposed Solution Template**

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| Date | 25 June 2025 |
| Team ID | LTVIP2025TMID32541 |
| Project Name | Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in the proposed solution template.

| **S.No.** | **Parameter** | **Description** |
| --- | --- | --- |
| **1.** | **Problem Statement** (Problem to be solved) | Difficulty in identifying rotten or spoiled fruits and vegetables, leading to health risks, wastage, and customer dissatisfaction due to lack of quick, accurate, and non-expert-friendly tools. |
| **2.** | **Idea / Solution Description** | An AI-powered web application that uses transfer learning (VGG16) to classify uploaded fruit/vegetable images as *Healthy* or *Rotten*. The system displays a confidence score and provides a clear recommendation such as “Good to Eat” or “Don’t Eat.” It is built using Flask and TensorFlow. |
| **3.** | **Novelty / Uniqueness** | Leverages pre-trained deep learning models (transfer learning) to deliver fast, lightweight predictions with 28-class support. It requires no technical expertise, offers real-time image-based analysis, and includes a feedback system to improve over time. |
| **4.** | **Social Impact / Customer Satisfaction** | Ensures safer food consumption, reduces food wastage, builds consumer trust, and empowers local vendors with affordable technology. Enhances public health and supports digital transformation in traditional markets. |
| **5.** | **Business Model (Revenue Model)** | Freemium model: Free basic version for vendors and consumers; premium version for supermarkets and delivery companies with batch analysis, API access, and admin dashboard. Potential ad revenue or partnership with agri-tech firms. |
| **6.** | **Scalability of the Solution** | Highly scalable – can be deployed across regions, integrated with mobile apps, expanded to other food categories, and enhanced through feedback-based model retraining. Can also support multiple languages and platforms in future. |