Project Design Phase
Proposed Solution Template

Date	22 June 2025
Team ID	LTVIP2025TMID35377
Project Name	Smart Sorting: Identifying rotten fruits and vegetables using transfer learning
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)	Manual identification of rotten fruits and vegetables is time-consuming, error-prone, and inconsistent. It leads to supply chain losses, reduced quality assurance, and increased labor costs. There is a need for an automated, low-cost, and reliable solution for early spoilage detection.
2.	Idea / Solution description	The project uses **transfer learning with VGG16** to develop a smart sorting system that can classify fruits and vegetables as **fresh or rotten** using camera images. The solution runs on smartphones or low-end devices, making it accessible and easy to use. It provides real-time predictions and confidence scores to assist farmers, vendors, and wholesalers in sorting produce accurately.
3.	Novelty / Uniqueness	The solution combines the power of **AI and computer vision** with **affordability and simplicity**. It brings cutting-edge technology to low-resource environments without requiring expensive hardware or internet access. By leveraging **pre-trained models and transfer learning**, it achieves high accuracy with minimal data and infrastructure.
4.	Social Impact / Customer Satisfaction	The system reduces food wastage, increases income for farmers/vendors, and ensures better quality for end consumers. It empowers rural users with modern tools, improves supply chain efficiency, and supports sustainable agriculture. Enhanced accuracy in sorting leads to higher customer satisfaction and trust.
5.	Business Model (Revenue Model)	The solution can be offered as a **freemium mobile/web application**, where basic features are free and advanced analytics or bulk usage is part of a paid plan. Revenue can also be generated through **B2B licensing** to warehouses, food companies, or government agri-schemes. Optional **hardware kits** or on-

		premise deployments can be sold as part of a package.
6.	Scalability of the Solution	The model can be **scaled geographically** to different regions and adapted for multiple fruits and vegetables. It can also be extended to detect **other defects** like bruises or over-ripeness. The system supports **integration with existing sorting machines**, mobile apps, or cloud dashboards for larger enterprises.