**Ideation Phase**

**Define the Problem Statements**

|  |  |
| --- | --- |
| Date | 19 June 2025 |
| Team ID | LTVIP2025TMID35526 |
| Project Name | Smart Sorting: identifying rotten fruits and vegetables using transfer learning |
| Maximum Marks | 2 Marks |

**Smart Sorting – Problem Statement Template**

| **Statement** | **Content** |
| --- | --- |
| **I am (Customer)** | **A farmer, seller, or supply chain worker handling large quantities of fruits and vegetables.** |
| **I’m trying to** | **Ensure only fresh produce reaches customers by sorting out the rotten ones.** |
| **But** | **Manual sorting is slow, inconsistent, and prone to human error.** |
| **Because** | **It's difficult to visually detect rot, especially under time pressure.** |
| **Which makes me feel** | **Frustrated, anxious about product quality, and worried about food wastage.** |

**PS-1 (Farmer/Seller View)**

| **Element** | **Content** |
| --- | --- |
| I am | A local vendor trying to maintain produce quality. |
| I’m trying to | Quickly sort fresh and rotten items to meet daily sales. |
| But | It takes too much time and some rotten items go unnoticed. |
| Because | Manual inspection isn't reliable. |
| Which makes me feel | Stressed and concerned about losing customers. |

**PS-2 (Tech Developer/Team View)**

| **Element** | **Content** |
| --- | --- |
| I am | A developer solving real-world agriculture problems. |
| I’m trying to | Build an accurate and efficient model for detecting rotten produce. |
| But | Real-time classification with high accuracy is challenging. |
| Because | Fruit defects vary a lot and datasets are limited. |
| Which makes me feel | Determined to improve automation using AI. |

**Project Title:** Smart Sorting – Identifying Rotten Fruits and Vegetables Using Transfer Learning.  
Manual sorting of fruits and vegetables is time-consuming and often inaccurate, leading to food waste and reduced quality. Supermarkets and supply chains lack efficient tools to automatically detect and separate rotten produce.  
**Problem Statement**:  
There is a need for an intelligent, automated solution that can accurately detect rotten fruits and vegetables using computer vision. This would reduce human error, improve sorting efficiency, and enhance overall food quality in the supply chain.  
**Proposed Solution:**Our project leverages transfer learning to develop a smart classification system capable of distinguishing between fresh and rotten produce. By fine-tuning pre-trained deep learning models on a custom dataset of fruits and vegetables, we aim to build a real-time system for efficient sorting.  
**Target Outcome**: - Achieve high accuracy in classification (>90%).  
- Enable real-time inference suitable for use in sorting lines.  
- Minimize food wastage and improve supply chain quality control.