**Ideation Phase**

**Define the Problem Statements**

|  |  |
| --- | --- |
| Date | 19 June 2025 |
| Team ID | LTVIP2025TMID41465 |
| Project Name | Smart Sorting: identifying rotten fruits and vegetables using transfer learning |
| Maximum Marks | 2 Marks |

**Smart Sorting – Problem Statement Template**

**Statement**

| **Element** | **Content** |
| --- | --- |
| **I am** | **A produce distributor, warehouse worker, or farmer handling bulk fruits and vegetables.** |
| **I’m trying to** | **Ensure that only healthy produce gets delivered to retailers and customers.** |
| **But** | **Manual inspection is inconsistent, labor-intensive, and delays processing.** |
| **Because** | **Subtle signs of spoilage are hard to detect quickly without specialized tools.** |
| **Which makes me feel** | **Worried about losing revenue, frustrated by inefficiency, and concerned about waste.** |

**🧑‍🌾 PS-1 (Farmer/Distributor View)**

| **Element** | **Content** |
| --- | --- |
| **I am** | **A farm owner aiming to guarantee the freshness of my harvest.** |
| **I’m trying to** | **Rapidly separate spoiled items from good ones before shipping.** |
| **But** | **Sorting by hand is slow and prone to mistakes.** |
| **Because** | **Rotten spots can be hidden or appear similar to minor bruises.** |
| **Which makes me feel** | **Stressed and anxious about customer complaints and returns.** |

**👨‍💻 PS-2 (Technical Team View)**

| **Element** | **Content** |
| --- | --- |
| **I am** | **A machine learning engineer working on solutions for agriculture.** |
| **I’m trying to** | **Develop a precise, reliable computer vision system for quality assessment.** |
| **But** | **Training models that generalize well to all fruit varieties is difficult.** |
| **Because** | **Images of spoilage vary in lighting, shape, and appearance across contexts.** |
| **Which makes me feel** | **Motivated to innovate and improve agricultural automation.** |

**💡 Problem Statement:**

**Current sorting practices for fruits and vegetables are inefficient and prone to error, causing supply chain losses and customer dissatisfaction. There is a clear need for an advanced automated inspection tool that can accurately identify signs of spoilage across diverse produce types in real time.**

**✅ Proposed Solution:**

**This project applies deep learning techniques, specifically transfer learning on convolutional neural networks, to create a robust classification model. By training on curated datasets of fresh and spoiled produce images, we will design a system capable of performing automated visual inspections during processing and packaging.**