**Project Design Phase**

**Problem – Solution Fit Template**

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| Date | 15 February 2025 |
| Team ID | LTVIP2025TMID34781 |
| Project Name | Smart Sorting |
| Maximum Marks | 2 Marks |

**Problem – Solution Fit Template:**

**Here is a structured Problem – Solution Fit Template tailored for your project "Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables":**

**✅ Problem – Solution Fit Template**

**🔍 1. Problem Statement**

**Manual sorting of fruits and vegetables to identify rotten items is time-consuming, error-prone, and inefficient. This leads to:**

* **Increased food wastage**
* **Reduced product quality**
* **Higher labor costs**
* **Inconsistent quality checks**

**This is especially problematic in agricultural warehouses, supermarkets, and food processing industries where real-time decisions are needed.**

**🎯 2. Target Audience**

* **Farmers and agricultural cooperatives**
* **Warehouse and inventory managers**
* **Supermarkets and retail vendors**
* **Food processing companies**
* **Export quality control teams**

**❗ 3. User Needs**

* **A system that can quickly and accurately identify rotten produce**
* **Visual feedback on freshness levels**
* **A user-friendly interface for non-technical users**
* **Scalability for high-volume operations**

**💡 4. Proposed Solution**

**Develop a smart, AI-based image classification system using transfer learning that:**

* **Classifies images of fruits/vegetables as Fresh or Rotten**
* **Uses pre-trained CNN models (e.g., MobileNetV2, ResNet50)**
* **Allows image input via upload or real-time capture**
* **Displays predictions with confidence scores**
* **Provides an export option for classification results (PDF/CSV)**

**⚙️ 5. Key Features**

* **Image upload via drag-and-drop or camera**
* **Real-time classification using trained deep learning model**
* **Data preprocessing (normalization, resizing, augmentation)**
* **User-friendly web interface (Flask or Streamlit)**
* **Exportable reports for traceability**

**📈 6. Benefits**

* **Reduces manual labor and error**
* **Minimizes food waste**
* **Enhances efficiency in sorting processes**
* **Improves product quality and consistency**
* **Supports scalable deployment across farms, stores, and industries**

**Template:**

Calendar

Description automatically generated

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>