**Brainstorm & Idea Prioritization Template**

**Date:** 31 January 2025  
**Project Name:** Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables  
**Project ID:** SBAP0041896  
**Maximum Marks:** 4 Marks

### Step-1: Team Gathering, Collaboration and Select the Problem Statement

Our team convened to address the growing issue of food waste due to late detection of spoilage in fruits and vegetables. We selected a problem statement focused on developing a smart sorting system using transfer learning to automatically identify rotten produce. This aligns with our goal to support sustainable agriculture and minimize food loss during storage and distribution.

**Problem Statement Selected:** *“Develop a smart sorting system using transfer learning techniques to detect and segregate rotten fruits and vegetables in real-time.”*

### Step-2: Brainstorm, Idea Listing and Grouping

**Ideas Generated:**

* Use pre-trained CNN models like ResNet or MobileNet for transfer learning.
* Collect and label a dataset of fresh and rotten fruits/vegetables.
* Implement image preprocessing for better model accuracy.
* Develop a mobile app interface for farmers to use the model in real-time.
* Integrate IoT-based conveyor belt system with camera and sensors.
* Use edge computing for faster on-site processing.
* Optimize model for lightweight deployment on mobile and embedded systems.

**Grouped Concepts:**

* **Data & AI:** Transfer learning, CNN models, dataset collection, preprocessing.
* **Hardware Integration:** IoT sensors, conveyor belt system, edge computing.
* **User Interface:** Mobile app, user-friendly feedback system.

### 📊 **Diagram 1: Sorting Process Flow with AI Model**

plaintext

CopyEdit

┌────────────────────┐

│ Image Capturing │◄─── Camera/Sensor on Conveyor Belt

└────────┬───────────┘

│

▼

┌────────────────────────┐

│ Image Preprocessing │

└────────┬───────────────┘

│

▼

┌───────────────────────────────┐

│ AI Model (Transfer Learning): │

│ e.g., MobileNet/ResNet │

└────────┬──────────────────────┘

│

▼

┌───────────────────────────────┐

│ Classification: │

│ Rotten | Fresh │

└────┬─────────┴────────┬───────┘

▼ ▼

┌────────────┐ ┌─────────────┐

│ Rejected │ │ Accepted │

│ Bin │ │ Bin │

└────────────┘ └─────────────┘

### Step-3: Idea Prioritization

**Criteria Used for Prioritization:**

* Feasibility
* Impact on reducing food waste
* Cost-effectiveness
* Ease of implementation

### ✅ **Diagram 2: Priority Matrix (Feasibility vs Impact)**

graphql

CopyEdit

IMPACT

▲

│

High Impact │ High Impact

Low Feasibility │ High Feasibility

│

┌──────────────────┼──────────────────┐

│ Edge Computing │ Mobile Interface │

│ Integration │ for Farmers │

└──────────────────┼──────────────────┘

│

Low Impact │ Low Impact

Low Feasibility │ High Feasibility

│

▼

FEASIBILITY

**Top Prioritized Ideas:**

1. Transfer learning with MobileNet for fruit classification
2. Image preprocessing for higher accuracy
3. IoT conveyor system for automated sorting
4. Mobile interface for farmer usability

**Diagram: Priority Matrix (Feasibility vs Impact)**

This brainstorming session helped us align our ideas toward a unified, impactful solution that combines AI with practical deployment methods for identifying and sorting rotten produce efficiently.