

# **Problem – Solution Fit Template**

## **Brainstorm & Idea Prioritization Template**

### **Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables**

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#### **Problem – Solution Fit Template:**

The Problem–Solution Fit means we've identified a real, recurring problem in the food industry—manual and error-prone sorting of fruits and vegetables—and we've built a technology-driven solution using transfer learning that actually addresses and improves this issue.

#### **Purpose:**

- Traditional sorting methods are manual, inconsistent, and labor-intensive. Our solution uses AI-based image classification to automate the identification of rotten vs. fresh produce, offering a cost-effective, accurate, and fast approach that aligns with the operational needs of retailers, farmers, food warehouses, and supermarkets. Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Market messaging focuses on reducing food waste, lowering manual labor costs, and improving food quality control. Key triggers include profit loss due to spoilage, regulatory standards, and customer dissatisfaction due to poor quality produce.
- Our research into sorting operations in farmers' markets, food packaging centers, and supermarkets shows a demand for automation and quality control. The smart sorting system enhances existing workflows with minimal disruption, leading to better operational efficiency and food quality.

#### **Template:**

# Sorting of Fresh Fruits Using Transfer Learning

<b>Customer Segment</b> <ul style="list-style-type: none"><li>• Farmers</li><li>• Food suppliers</li><li>• Supermarkets</li><li>• Cold storage units</li></ul>	<b>Customer Constraints</b> <ul style="list-style-type: none"><li>• Manual labor is costly and inconsistent</li><li>• Lack of access to AI expertise</li><li>• Low-tech infrastructure in rural areas</li></ul>	<b>Available Solutions</b> <ul style="list-style-type: none"><li>• Manual visual inspection</li><li>• Basic color sensors</li><li>• Industrial sorting machines (very expensive)</li></ul>
<b>Problems</b> <ul style="list-style-type: none"><li>• Rotten or low-quality produce getting shipped</li><li>• Food wastage</li><li>• Inaccurate grading</li></ul>	<b>Problem Root Cause</b> <ul style="list-style-type: none"><li>• Human error in sorting</li><li>• No real-time detection system</li><li>• Lack of scalable automation</li></ul>	<b>Behavior</b> <ul style="list-style-type: none"><li>• Daily manual checking</li><li>• Workers sort based on appearance</li><li>• Inconsistent handling across shifts</li></ul>
<b>Triggers</b> <ul style="list-style-type: none"><li>• Customer complaints about fruit quality</li><li>• Financial loss due to spoilage</li><li>• Pressure to meet food</li></ul>	<b>Your Solution</b> <ul style="list-style-type: none"><li>• AI-powered image classification using transfer learning (e.g. ResNet, MobileNet)</li><li>• Low-cost camera +</li></ul>	<b>Channels of Behavior</b> <ul style="list-style-type: none"><li>• Integrate into existing conveyor belts or packing stations</li><li>• Dashboard or mobile app for visual</li></ul>

## References:

- <https://ashleyycz.medium.com/how-i-made-a-dnn-to-detect-rotten-produce-using-a-cnn-f2f16a316914>
- [https://www.researchgate.net/publication/365198552\\_SORTING\\_OF\\_FRESH\\_FRUITS\\_USING\\_TRANSFER\\_LEARNING](https://www.researchgate.net/publication/365198552_SORTING_OF_FRESH_FRUITS_USING_TRANSFER_LEARNING)