

# Customer Journey Map: Smart Sorting

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Team ID	LTVIP2026TMIDS83701
Project Name	Smart Sorting: Transfer learning for identifying Rotten Fruits and Vegetables
Maximum Marks	4 Marks

## Introduction

This document outlines the customer journey for the **Smart Sorting Transfer Learning System**, detailing the steps a user (such as a food quality inspector, warehouse manager, or retailer) takes when interacting with the system for identifying fresh and rotten fruits and vegetables. This journey map provides a high-level overview of the user's experience while using the automated smart sorting platform.

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## Customer Journey Stages

The customer journey for the Smart Sorting system can be broken down into the following key stages:

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### Stage 1: Produce Collection

- **User Action:** Inspector or staff receives fruits and vegetables from suppliers or farms.
  - **Description:** This is the initial physical step where produce arrives at the warehouse, retail store, or processing unit. Traditionally, quality checks begin manually at this stage.
  - **Pain Points:** Manual inspection is time-consuming, labor-intensive, and inconsistent.
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## Stage 2: Image Capture

- **User Action:** User captures digital images of fruits and vegetables.
  - **Description:** Using cameras or mobile devices, images of the produce are captured. These images serve as input for the smart sorting system.
  - **Key Considerations:** Image quality, lighting conditions, background consistency, and proper angle are crucial for accurate classification.
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## Stage 3: Image Upload

- **User Action:** User uploads captured images to the Smart Sorting web or mobile application.
- **Description:** The captured images are uploaded through the application interface. The user selects the image files and initiates the upload process.

- **Touchpoints:** Smart Sorting Web/Mobile Application (Upload Page).
  - **Goals:** Fast, simple, and user-friendly image submission.
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#### **Stage 4: Image Processing and Classification**

- **System Action:** The backend system processes the uploaded image and performs classification using transfer learning.
  - **Description:** Once uploaded, the system backend activates a pre-trained deep learning model (e.g., ResNet, MobileNet, or EfficientNet fine-tuned via transfer learning). The model analyzes visual features such as color changes, texture patterns, and surface damage to classify produce as **fresh or rotten**. This process is fully automated and happens in real time.
  - **Key Technologies:**
    - Transfer Learning-based Deep Learning Model
    - Flask/Django Backend (or equivalent framework)
    - Image Processing Pipeline
  - **User Expectation:** Quick and highly accurate freshness detection.
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## Stage 5: Result Display

- **User Action:** User views classification results and sorting recommendation.
- **Description:** After processing, the system displays the result on the results page. The output includes:
  - Fresh or Rotten classification
  - Confidence score
  - Suggested action (e.g., “Send to Market” or “Remove from Stock”)
- **Touchpoints:** Smart Sorting Application (Results Page).
- **Goals:** Clear, actionable, and easy-to-understand results that support efficient decision-making.

# Summary of Customer Journey

Stage	User Action	System Interaction	Key Considerations / Pain Points	Touchpoints
1. Produce Collection	Staff receives fruits and vegetables from farms or suppliers	None (Manual Process)	Time-consuming manual inspection, labor-intensive, inconsistent quality checks	Physical produce, warehouse, market environment
2. Image Capture	Staff captures digital images of fruits and vegetables	Camera / Imaging device	Image quality, lighting conditions, resolution, background consistency	Camera, mobile device, sorting station, computer
3. Image Upload	User uploads images to Smart Sorting web/mobile application	Upload interface, file submission system	Ease of use, upload speed, supported file formats	Smart Sorting web/mobile application (Upload Page)
4. Image Processing & Classification	None (System Action)	Backend server, Transfer Learning Model (e.g., ResNet/MobileNet fine-tuned model)	Accuracy, processing speed, robustness under different lighting and produce variations	Backend servers, ML algorithms, cloud infrastructure
5. Result Display	User views freshness classification results	Results interface (Fresh/Rotten prediction, confidence score)	Clarity of results, interpretability, actionable recommendations	Smart Sorting application (Results Page / Dashboard)

## Conclusion

This customer journey map highlights the critical interaction points between the user and the **Smart Sorting Transfer Learning system**. By automating the image processing and classification stages, the system significantly reduces the manual effort and potential errors involved in inspecting fruits and vegetables for spoilage. While the initial stages of produce collection and image capture may still involve manual handling, the seamless digital workflow—from image upload to freshness prediction and result display—provides an efficient and intelligent solution for quality inspectors, retailers, and warehouse managers. This automation enhances operational efficiency, ensures consistent quality assessment, minimizes food waste, and supports better decision-making in supply chain management.