

# Microsoft Power Automate Hands-on Lab 2

---

## Custom Object Detection with AI Builder - Green Tea Detection

---

### Prerequisites

- Microsoft 365 account with Power Automate and AI Builder licences
  - AI Builder credits enabled in your environment
  - Access to a SharePoint site where you can create a document library and a list
  - Sample images for testing (green tea products)
  - Permissions to create and edit flows, AI Builder models, SharePoint lists, and libraries
- 

### Step 1: Create and Train Custom Object Detection Model

**Note:** The object detection model creation uses a step-by-step wizard. You'll see the following steps in the left navigation: Select domain → Choose objects → Add images → Tag images → Model summary.

#### 1.1 Navigate to AI Builder

1. Open your browser and go to <https://make.powerapps.com> or <https://make.powerautomate.com>.
2. In the left navigation, click **AI hub**.
3. Click **AI models** in the left navigation.
4. Click the **Images** tab at the top to filter image-related models.
5. Find and click on **Object detection** card which shows "Detect custom objects in images".
6. Click **Create custom model** button.

## Select Detect custom objects in images

You have 27 days and 100% capacity left in your free trial. You won't be able to use your models after your trial ends. [Learn more](#)

**AI models**

[Most popular](#) [Documents](#) [Text](#) [Structured data](#) [Images](#) [All](#)

- Text recognition**  
Extract all the text in photos and PDF documents (OCR)  
[PREBUILT MODEL](#)
- Object detection**  
Detect custom objects in images  
[CUSTOM MODEL](#)
- Image description**  
Generate description of an image  
[PREBUILT MODEL](#) [PREVIEW](#)

[My models](#) [Shared with me](#) [All models](#)

You don't have any models

This is where your models will live. Create a model to get started. [Learn more](#)

## Select Create custom model

**Detect custom objects in images**

Easily build, train and publish an object detection custom model to identify and locate custom object in images. Custom models are trained with your own data, so they're tailored to your business needs. Check out our [learn module](#) to get started with building a custom object detection model to detect and count objects in images.

[CUSTOM MODEL](#) [PREMIUM](#)

In the example below, the model was trained to detect and count tea boxes in images.

Object name	Object count
Green Tea Rose	1
Green Tea Mint	1
Green Tea Cinnamon	1

[View documentation](#) [Create custom model](#)

## 1.2 Select Domain

1. On the "Select domain" step, you'll see the heading **Select your model's domain**.
2. Choose the appropriate domain for your scenario:
  - **Common objects** - for general object detection

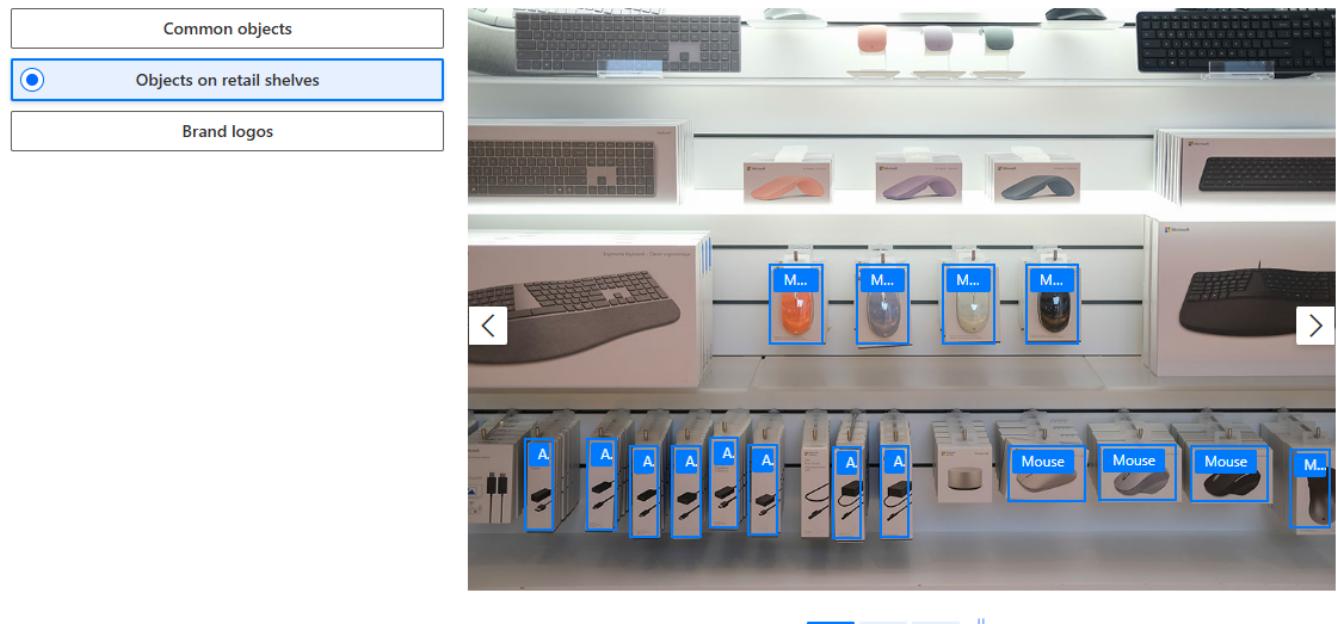
- **Objects on retail shelves** - for retail products
- **Brand logos** - for logo detection

3. For this lab, select **Common objects** - we will get better results than the retail products one
4. Click **Done** to proceed.

## Select our models domain

### Select your model's domain

When models focus on specific types of objects, they can be more accurate. If you don't see the right option, select **Common objects**. [Learn more](#)



## 1.3 Choose Objects

1. You'll now see the "Choose objects" step in the wizard on the left side.
2. Give your model a name in the top right (click the "Object Detection" title to rename it): **Green Tea Detector**

**💡 Tip:** To ensure your model has a unique name in a shared environment, prefix it with your initials. For example, if your name is John Smith, use **JS\_GreenTeaDetector** or **JS Green Tea Detector**.

3. On the "Choose objects" screen, click **+ Add object**.
4. Type: **Green Tea Rose** (for the rose-flavored green tea)
5. Click the checkmark or press Enter to add it.
6. Repeat to add more objects if needed:
  - **Green Tea Mint**
  - **Green Tea Cinnamon**
7. Click **Next** to proceed.

## Selected objects to detect

 Select from database

## Choose objects for your model to detect

You can add them manually or select from your database. [Learn more](#)

### Object names

Green Tea Rose

Green Tea Mint

Green Tea Cinnamon

 Add new object

## 1.4 Add Images

1. You'll now be on the "Add images" step in the wizard.
2. Click **+ Add images** button.
3. Select at least 15-50 images containing green tea products from the **Green Tea/Train** folder.
  - **Tip:** Use diverse images with different angles, lighting, and backgrounds.
  - **Note:** Sample green tea images are available in the **Green Tea/Train** folder in this repository.
4. Wait for the images to upload.
5. Click **Next** to proceed to tagging.

## Add images

### Select a data source



My device



SharePoint



Azure Blob Storage



### Choose images from your device

## Upload all 30 training images

### Upload images

These images will be used to train your model.

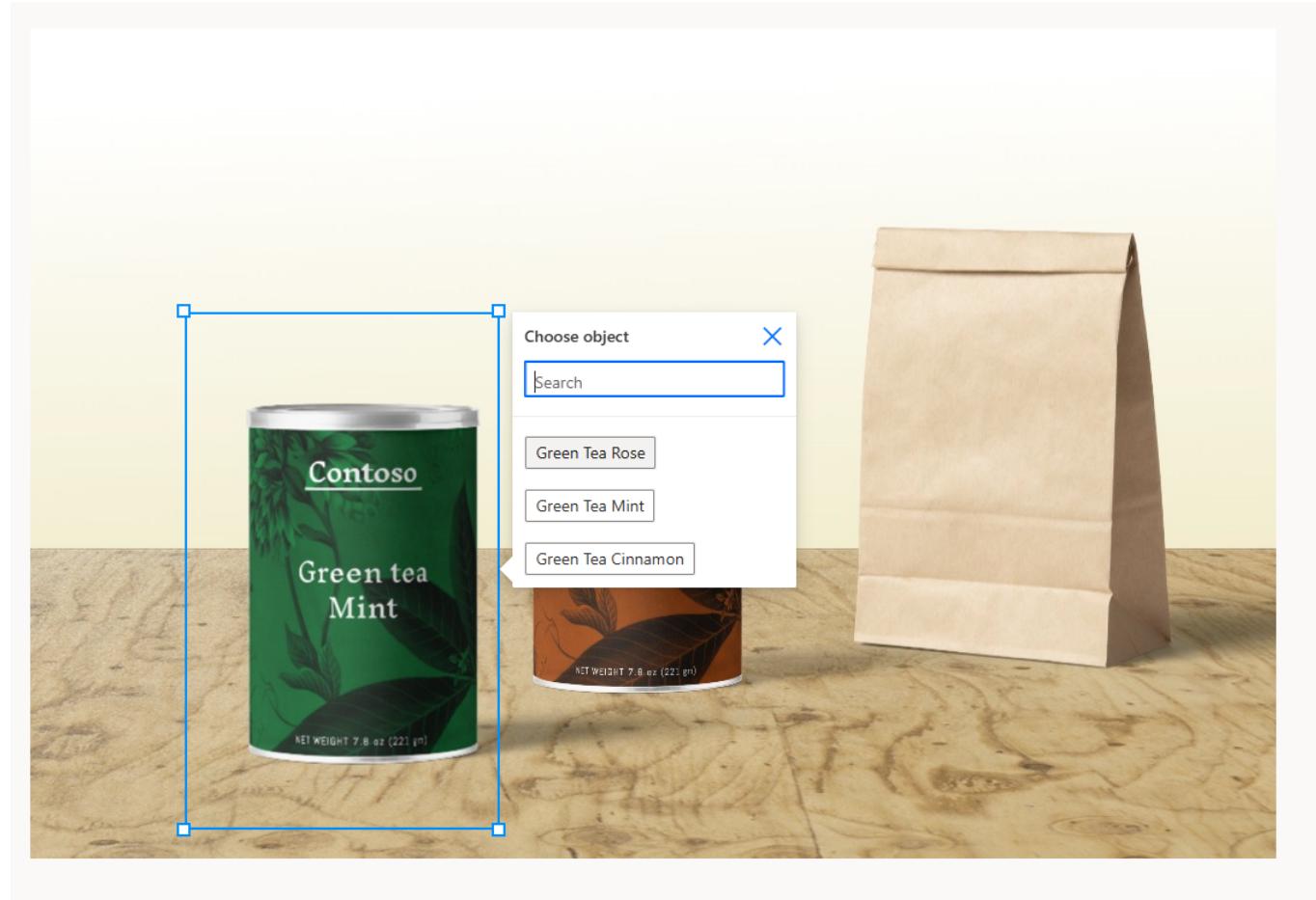
	Name	Size	Status
<input checked="" type="checkbox"/>	Contoso Tea (1).jpeg	1.1 MB	
<input checked="" type="checkbox"/>	Contoso Tea (2).jpeg	324.1 KB	
<input checked="" type="checkbox"/>	Contoso Tea (3).jpeg	593.5 KB	
<input checked="" type="checkbox"/>	Contoso Tea (4).jpeg	1.3 MB	
<input checked="" type="checkbox"/>	Contoso Tea (5).jpeg	1 MB	
<input checked="" type="checkbox"/>	Contoso Tea (6).jpeg	517.2 KB	
<input checked="" type="checkbox"/>	Contoso Tea (7).jpeg	1.1 MB	
<input checked="" type="checkbox"/>	Contoso Tea (8).jpeg	195.2 KB	
<input checked="" type="checkbox"/>	Contoso Tea (9).jpeg	413.4 KB	

Upload 30 images Cancel

## 1.5 Tag Images

1. You'll now be on the "Tag images" step in the wizard.
2. For each image, draw bounding boxes around the green tea products:
  - Click and drag to create a box around each green tea item.
  - Select the appropriate label from the dropdown (e.g., **Green Tea Rose**, **Green Tea Mint**, **Green Tea Cinnamon**).
  - Repeat for all green tea products in the image.
3. Click the right arrow to move to the next image.
4. Continue tagging all images (you need at least 15 tagged images per object).
5. Once all images are tagged, click **Done Tagging** to proceed.

## Tagging Green Tea Mint in an image



## 1.6 Model Summary and Train

1. You'll now be on the "Model summary" step in the wizard.
2. Review your model configuration:
  - Domain selected
  - Objects defined
  - Number of images uploaded and tagged
3. Click **Train** button to start training your model.
4. Wait for the training to complete (this may take several minutes to an hour).
5. Once training is complete, review the model performance metrics.

## Model summary

### Model summary

Review your model's details below. If something is missing you can go back to the previous steps. If everything looks good, select Train. Learn more about training. [Learn more about training](#)

Overview		
Owner	Model type	Object type
Nick Lloyd-Jenkins	Object Detection	Objects on retail shelves
Image sources		
Data source		Number of images
 My device		30 images
Information to extract		
Object	Tags	
Green Tea Rose	17	
Green Tea Mint	17	
Green Tea Cinnamon	15	

[Back](#)

[Train](#)

## 1.7 Test and Publish the Model

1. Click **Quick test** to test your model with a new image.
2. Upload a test image containing green tea products.
3. Review the detection results (bounding boxes and confidence scores).
4. If satisfied with the results, click **Publish**.
5. Confirm the publication.

### Screenshot Placeholder:

Show the test results with detected green tea products.

## Step 2: Prepare SharePoint

## 2.1 Create a Document Library for Images

1. Open your browser and go to your SharePoint site.
2. In the left navigation, click **Site contents**.
3. Click **+ New > Document library**.
4. In the "Name" box, type: **Product Images**

**💡 Tip:** To ensure your library has a unique name in a shared environment, prefix it with your initials. For example, if your name is John Smith, use **JS\_ProductImages**.

5. Click **Create**.

### Product Images Library created

## 2.2 Create a SharePoint List for Detection Results

1. On your SharePoint site, click **Site contents** in the left navigation.
2. Click **+ New > List**.
3. Click **List**.
4. In the "Name" box, type: **Detection Results**

**💡 Tip:** To ensure your list has a unique name in a shared environment, prefix it with your initials. For example, if your name is John Smith, use **JS\_DetectionResults**.

5. Click **Create**.
6. Add the following columns to the list:
  - **FileName** (Single line of text)
  - **ObjectDetected** (Single line of text)
  - **Confidence** (Number)
  - **DetectionDate** (Date and Time)
  - **ImageURL** (Hyperlink)
7. Click **Save** after each column.

### Detection Results List Created

## Step 3: Create the Detection Flow

### 3.1 Start a New Flow

1. Open your browser and go to <https://make.power automate.com>.
2. On the left, click **Create**.
3. Under "Start from blank", click **Automated cloud flow**.
4. In the "Flow name" box, type: **Detect Green Tea**

**Tip:** To ensure your flow has a unique name in a shared environment, prefix it with your initials. For example, if your name is John Smith, use **JS\_DetectGreenTea**.

5. In "Choose your flow's trigger", search for:  
**When a file is created (properties only)**
6. Click on the trigger called **When a file is created (properties only) [SharePoint]**.
7. Click **Create**.

### Create Detect Green Tea Flow

Build an automated cloud flow X

Flow name  
Detect Green Tea

Choose your flow's trigger \* i  
Search or select a trigger from the list below to create a flow. (Required)

When a file is created X

When a file is created OneDrive <span style="float: right;">i</span>
When a file is created OneDrive for Business <span style="float: right;">i</span>
When a file is created (properties only) OneDrive for Business <span style="float: right;">i</span>
When a file is created (properties only) OneDrive <span style="float: right;">i</span>
When a file is created (properties only) SharePoint <span style="float: right;">i</span>

Skip Create Cancel

### 3.2 Configure the SharePoint Trigger

1. In the **Site Address** dropdown, select or enter your SharePoint site.
2. In the **Library Name** dropdown, select **Product Images** (or the library you created in Step 2.1).
3. Leave the rest of the settings as default.

## When a file is created trigger configured

The screenshot shows the configuration of a 'When a file is created (properties only)' trigger in Microsoft Power Automate. The top navigation bar includes 'Parameters' (which is underlined), 'Settings', 'Code view', and 'About'. The main configuration area has two fields: 'Site Address \*' containing 'ARUP Playground - https://1nk13d.sharepoint.com/sites/ARUPPlayground' and 'Library Name \*' containing 'Product Images'. Below these, an 'Advanced parameters' section shows 'Showing 0 of 2' with 'Show all' and 'Clear all' buttons. At the bottom, it indicates 'Connected to Nick@1nk13d.onmicrosoft.com.' with a 'Change connection' link.

### 3.3 Add "Get file content" Action

1. Click **+ New step** or + in a circle, if using the New designer.
2. In the search box, type: **Get file content**
3. Select **Get file content [SharePoint]**.
4. In **Site Address**, select your SharePoint site (same as before).
5. In **File Identifier**, click in the box, then select **Identifier** from the Dynamic content list.

## Get file content configured

The screenshot shows the 'Get file content' configuration page in the Microsoft Power Automate designer. At the top, there's a back button and a three-dot menu. Below the header, there are tabs for 'Parameters' (which is selected), 'Settings', 'Code view', 'Testing', and 'About'. The main area has sections for 'Site Address' (containing 'ARUP Playground - https://1nk13d.sharepoint.com/sites/ARUPPlayground') and 'File Identifier' (containing 'Identifier'). There's also an 'Advanced parameters' section with a dropdown showing 'Showing 1 of 1' and buttons for 'Show all' and 'Clear all'. Below that is an 'Infer Content Type' section with a dropdown set to 'Yes'.

### 3.4 Add "Detect objects in images" Action

1. Click + **New step** or + in a circle, if using the New designer.
2. In the search box, type: **Detect objects in images**
3. Select **Detect and count objects in images** (AI Builder).
4. In **AI Model**, select your **Green Tea Detector** model from the dropdown. You may have named it differently
5. In **Image**, click in the box, then select **File content** from the Dynamic content list (from the previous "Get file content" step).
6. **Optional:** Rename this action to **Detect Green Tea** for clarity.

## Detect Green Tea configured

AI model \*

Object Detection 13/10/2025, 12:27:22

Image \*

File Content X

Connected to Nick@1nk13d.onmicrosoft.com. [Change connection](#)

## 3.5 Add Condition to Check if Objects Were Detected

1. Click **+** **New step** or **+** in a circle, if using the New designer.
2. In the search box, type: **Condition**
3. Select **Condition** (Control).
4. In the condition:
  - o Click in the first box and select **Detected object name** from Dynamic content (from the Detect Green Tea step).
  - o Set the operator to **is not equal to**.
  - o In the value box, type: ""

## Condition configured

Condition expression \*

Provide the values to compare and select the operator to use.

AND

tagName X is not equal to ''

+ New item

## 3.6 Add Actions in the "If yes" Branch

### a. Add "Apply to each" Loop

1. An apply to each loop will be added for you - you don't need to do this.

### b. Create Item in SharePoint List (Inside the Loop)

1. Inside the "Apply to each" loop, click **Add an action**.
2. Search for **Create item**.
3. Select **Create item [SharePoint]**.
4. In **Site Address**, select your SharePoint site.
5. In **List Name**, select **Detection Results**.
6. Click **Show all** to see all fields.
7. Map the following fields:

SharePoint Field	Value to Select from Dynamic Content	Notes
Title	<b>Display Name</b> (from Detect Green Tea)	The object label
FileName	<b>Name</b> (from the trigger "When a file is created")	Original file name
ObjectDetected	<b>Detected Object Name</b> (from Detect Green Tea)	Should be "Green Tea" if detected
Confidence	<b>Confidence</b> (from Detect Green Tea)	Detection confidence score
DetectionDate	Use expression: <code>utcNow()</code>	Current date/time
ImageURL	<b>Link to item</b> (from the trigger "When a file is created")	Link to the SharePoint file

## SharePoint Create Item configured

The screenshot shows the 'Create item' configuration page for a SharePoint list. At the top, there are tabs for 'Parameters' (which is selected), 'Settings', 'Code view', 'Testing', and 'About'. Below the tabs, there are two required fields: 'Site Address' (set to 'ARUP Playground - https://1nk13d.sharepoint.com/sites/ARUPPlayground') and 'List Name' (set to 'Detection Results'). A horizontal line separates this from the 'Advanced parameters' section. In the 'Advanced parameters' section, there are eight fields, each with a blue circular icon and an 'X' button to remove the value. The fields are: 'Title' (set to 'tagName'), 'Filename' (set to 'File name with e...'), 'ObjectDetected' (set to 'tagName'), 'Confidence' (set to 'confidence'), 'DetectionDate' (set to 'utcNow()'), 'ImageURL' (set to 'Link to item'), and a blank field. Below these fields is a note: 'Connected to Nick@1nk13d.onmicrosoft.com. Change connection'.

Parameters    Settings    Code view    Testing    About

Site Address \*

ARUP Playground - https://1nk13d.sharepoint.com/sites/ARUPPlayground

List Name \*

Detection Results

---

Advanced parameters

Showing 6 of 8

Title

tagName X

Filename

File name with e... X

ObjectDetected

tagName X

Confidence

confidence X

DetectionDate

utcNow() X

ImageURL

Link to item X

---

Connected to Nick@1nk13d.onmicrosoft.com. [Change connection](#)

### 3.7 Add Actions in the "If no" Branch (Optional)

1. In the **If no** branch, click **Add an action**.
2. Search for **Send an email**.
3. Select **Send an email (V2)** [Office 365 Outlook].
4. Configure the email:

- **To:** Your email address
- **Subject:** No Green Tea Detected - Check Image
- **Body:** Include the file name from Dynamic content

5. **Optional:** You can also create a list item indicating no detection.

## Step 4: Save and Test the Flow

1. In the top right, click **Save**.
2. Click **Test** (top right).
3. Choose **Manually** and click **Test**.
4. In a new browser tab, go to your SharePoint site and upload a test image containing green tea products to the **Product Images** library.
  - **Note:** Sample product images are available in this repository.
5. Return to Power Automate and watch the flow run.
6. Click on the run to see each step's output.
7. Check the detection results in the **Detect Green Tea** step to see the detected objects and confidence scores.
8. Go to your SharePoint list (**Detection Results**) and verify new items have been created for each detected green tea product.

### Flow run history

Oct 13, 02:43 PM (56 min ago)	00:00:06	Test succeeded
Oct 13, 01:47 PM (1 h ago)	00:00:03	Test succeeded
Oct 13, 01:41 PM (1 h ago)	00:00:02	Succeeded

### SharePoint Detection Results List

Detection Results						
<input checked="" type="checkbox"/>	Title	Filename	ObjectDetected	Confidence	DetectionDate	ImageURL
	Green Tea Rose	Contoso Tea (8).jpeg	Green Tea Rose	0.9138841	10/13/2025	<a href="https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg">https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg</a>
	Green Tea Mint	Contoso Tea (8).jpeg	Green Tea Mint	0.9048795	10/13/2025	<a href="https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg">https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg</a>
	Green Tea Rose	Contoso Tea (8).jpeg	Green Tea Rose	0.8579866	10/13/2025	<a href="https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg">https://1nk13d.sharepoint.com/sites/ARUPPlayground/Product%20Images/Contoso%20Tea%20(8).jpeg</a>

## Step 5: Enhance the Flow (Optional Improvements)

### 5.1 Add Confidence Threshold Filter

1. Modify the **Apply to each** loop to only create items for high-confidence detections.
2. Add a **Condition** inside the loop:
  - **Confidence** is greater than **0.7** (70%)
3. Only create the SharePoint item if the condition is true.

## 5.2 Add Image Thumbnail

1. Consider adding a column to store image thumbnails.
2. Use **Get file properties** action to retrieve additional file metadata.
3. Store the thumbnail URL in the SharePoint list.

## 5.3 Create Summary Email

1. After the loop, add an action to **Send an email** with a summary.
2. Include:
  - Total number of green tea products detected
  - Average confidence score
  - Link to the detection results list

### Screenshot Placeholder:

Show enhanced flow with additional conditions and actions.

---

## Notes and Troubleshooting

- **Low detection accuracy:** Train your model with more diverse images (minimum 15-50 images recommended).
  - **No objects detected:** Check that your test images contain green tea products similar to training images.
  - **Model not appearing in dropdown:** Ensure your AI Builder model is published and available in the same environment.
  - **Connection errors:** Verify all connections (SharePoint, AI Builder, Outlook) are authenticated.
  - **Confidence scores too low:** Retrain your model with more images or better-quality training data.
  - **Multiple detections of same object:** This is normal for object detection models; you may want to add logic to filter duplicates.
- 

## Best Practices for Object Detection

1. **Training Images:** Use at least 15-50 images per object, with varied:
  - Angles and perspectives
  - Lighting conditions
  - Backgrounds
  - Object sizes
2. **Tagging Accuracy:** Draw bounding boxes tightly around objects without including too much background.
3. **Model Performance:** After training, test with images that weren't in the training set.

4. **Confidence Thresholds:** Set appropriate confidence thresholds based on your use case (typically 0.5-0.8).
  5. **Regular Retraining:** Update your model with new images to improve accuracy over time.
-