Stock Detector using Azure Custom Vision

Project Overview

In this project, a stock detector wa developed using Azure Custom Vision to identity and count packaged food items (spaghetti and congee) on store shelves. The solution leverages machine learning to automate inventory management in a retail environment, utilizing Custom Vision's object detection capabilities. The model was trained and tested to achieve high accuracy in recognizing and localizibng multiple items in images.

Model Overview

The object detection model was trained using the Product on Shelves domain in Custom Vision. It supports two classes: spaghetti abd congee. The training process involved 94 images (88 for spaghetti and 93 for congee), with the model achieving 100% precision, recall, and mean Average Precision (mAP) after the first iteration, completed on 22:52:28 07/07/2025.

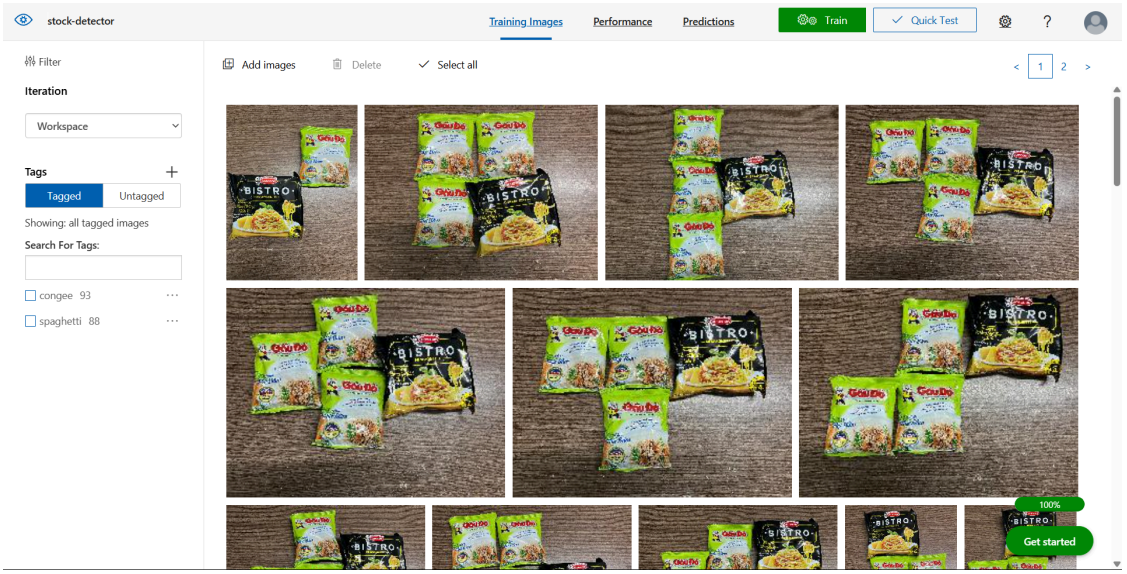
Tasks Completed

1. Configure Custom Vision Services

- Created a Resource Group named: stock-detector.
- Deployed a Custom Vision training resource and a prediction resource in the stock-detector group.

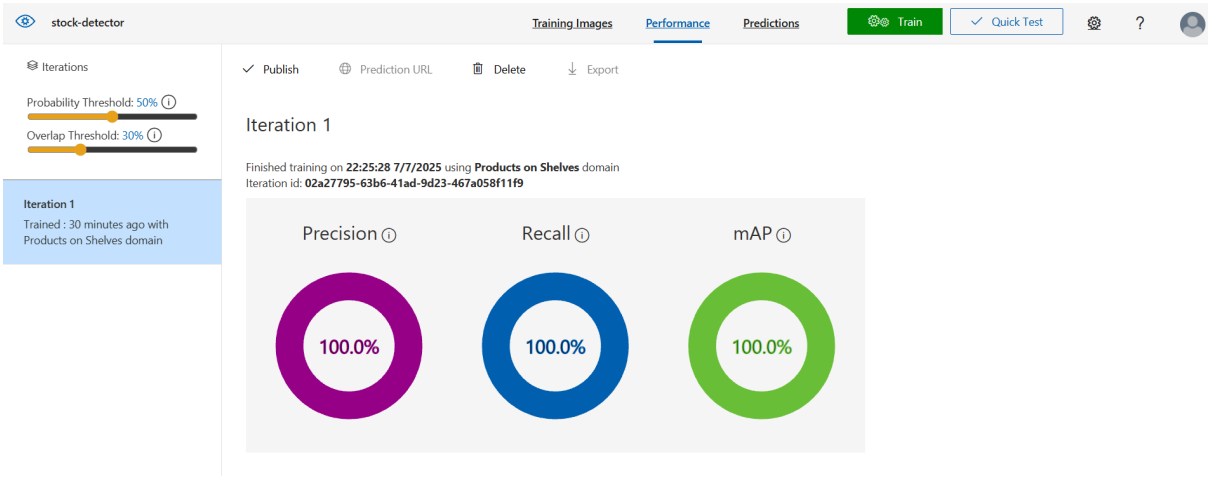
2. Data Preparation

- Uploaded and tagged 94 images across two classes: spaghetti (88 images) and congee (93 images)



3. Model Training

- Trained the model using the Products on Shelves domain with a probability threshold of 50% and an overlap threshold of 30%.
- Iteration 1 was completed in 30 minutes, achieving 100% performance metrics.

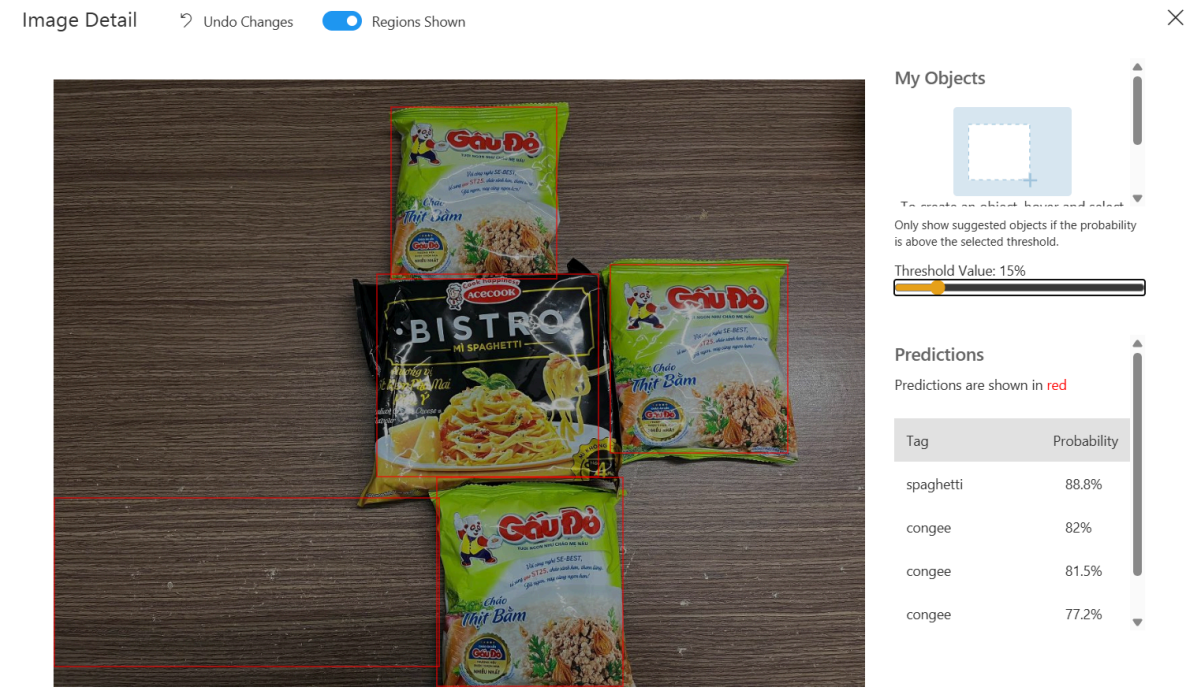


Performance Per Tag

Tag	Precision	Recall	A.P.	Image count
spaghetti	100.0%	100.0%	100.0%	88
congee	100.0%	100.0%	100.0%	93

Test and Evaluate the Classifier

- Image with one spaghetti pack and multiple congee packs.
- Results: spaghetti (88.8%), congee (82%, 81.5%, 77.2%).



Summary

- This project demonstrates the effectiveness of Azure Custom Vision in building a robust object detection model for retail inventory management. The model achieved perfect performance metrics, enabling accurate detection and counting of spaghetti and congee packs. This solution can be extended to monitor stock levels and support automated retail systems.