Analysis of Nutrition and Caloric Intake Using Image Classification Models

Introduction

Rise in diet-related diseases. Need for better nutrition tools. Traditional calorie tracking is tedious.

Project goals

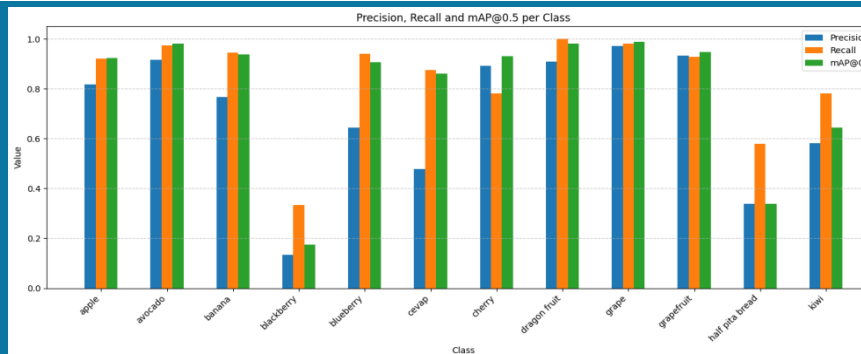Train a model to detect food and output caloric information

Project description

Our project analyzes food images and outputs the caloric information.

Results & Findings

YOLOv8 was very efficient for our problem. It generally performed well on most classes as can be seen by the high precision, recall and mAP scores.
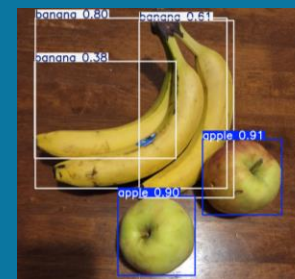

Precision, recall, mAP@0.5 per class

During development, we found the model needed large datasets to perform well, and the diversity of food items added significant complexity. We overcame these challenges and built an effective model.
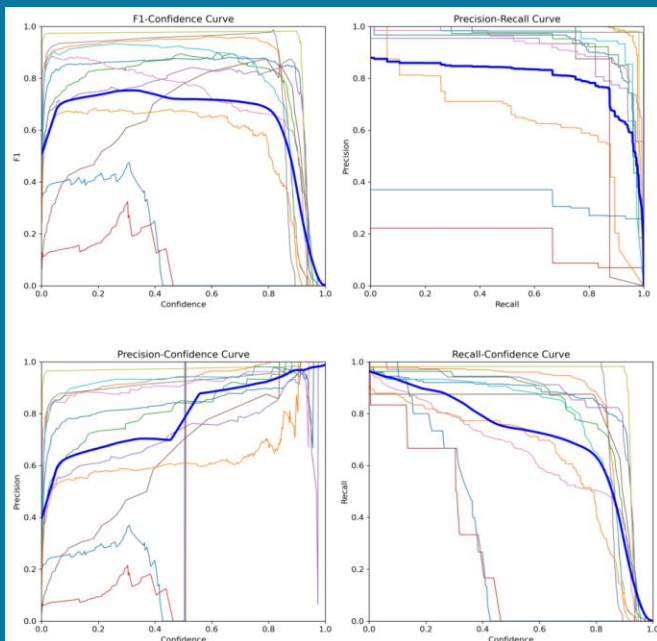
Visualization of Precison, recall and F1-Score

Confusion matrix showing excellent performance for most classes

Model correctly detecting all food items in the image

Evaluation strategy

Evaluation metrics	Human assessment
MAP\@0.5, Precision, Recall, F1-score and their visualizations	Manual evaluation of model predictions

Conclusions and implications

In conclusion, the model performed well overall but needs more data for full real-world applicability. Currently, its practical use remains limited.

Check out our repository by scanning the QR code:

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