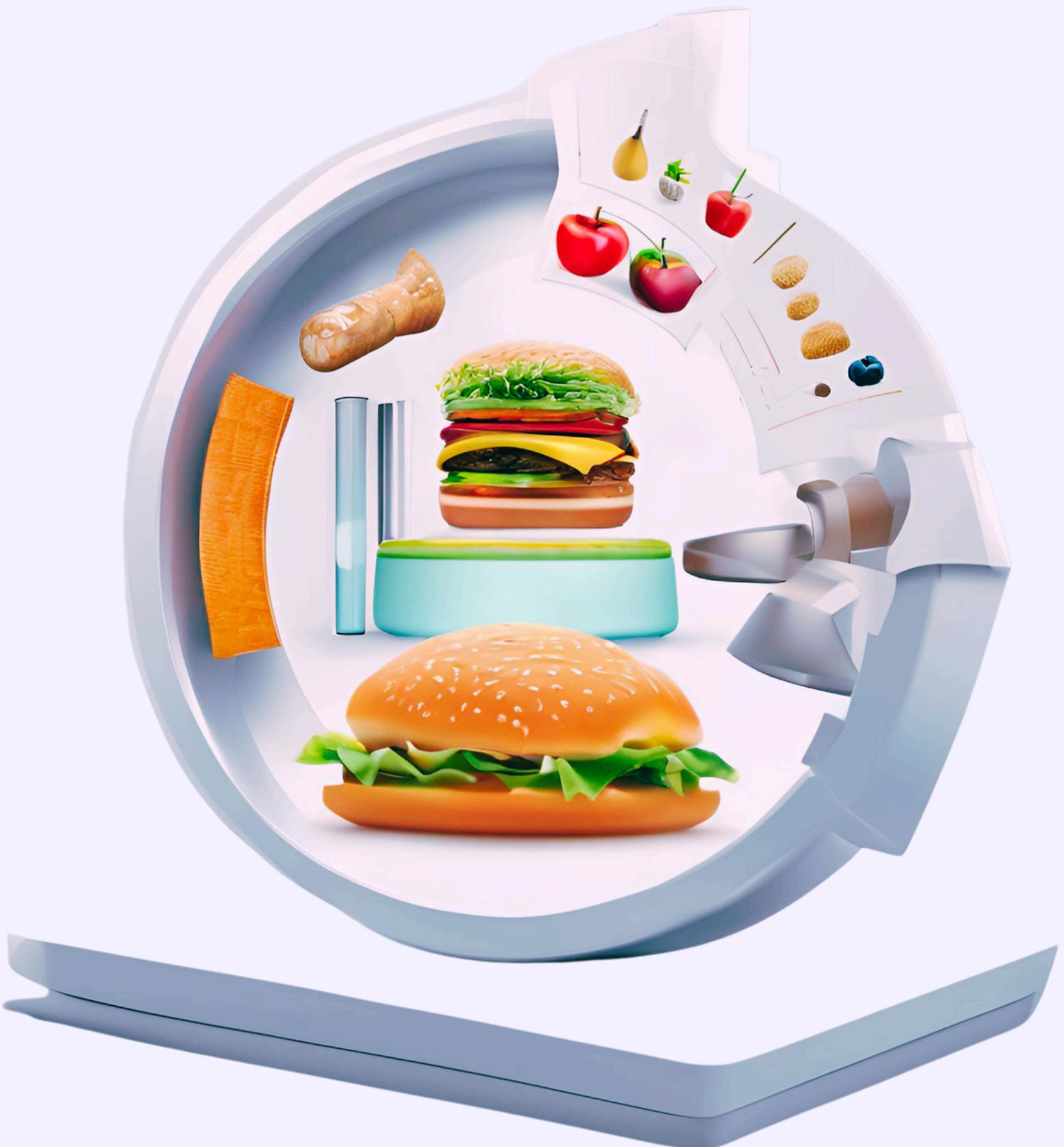


FOODSCAN

FOOD DETECTION AND ANALYSIS

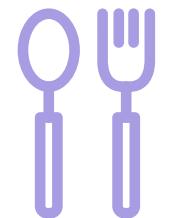
Website for making informed dietary choices
simple and intuitive



INTRODUCTION

FoodScan a web application designed to empower users with information about their food choices. Through image upload and analysis, FoodScan bridges the gap between what's on our plate and an understanding of its nutritional value.

- A web application to classify dishes from uploaded images.
- Provides recipes and detailed nutritional information for better dietary decisions.
- Compares nutritional values against recommended daily intake guidelines.



DELIVERABLES



Web Interface

A functional web interface built, allowing for image upload, result display and navigation



Dish Image Classification

ML model trained and deployed further integrated with website for food detection



Recipe Retrieval

Integrated with TheMealDB API to retrieve relevant recipes with ingredients and instructions



Nutrient Comparison

Integrated nutrient fetching RapidAPI to provide nutritional information



Diet Plan

Cuisine and health profile based Meal Finder and a height weight based meal Planner

DATASET

Food-101 Dataset

Categories

101 distinct food classes

1,000 images per category i.e. 101,000 total images

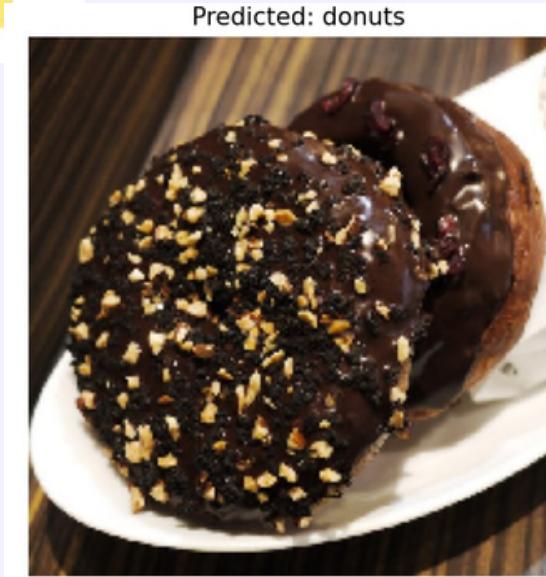
Data Splitting

Training Data - 75,750 images (75%)

Testing Data - 25,250 images (25%)



Predicted: samosa



Predicted: donuts

MODEL INCEPTION V3

InceptionV3 for robust feature extraction.

Custom Layers:

- **Global Average Pooling** to reduce dimensionality.
- **Fully connected dense layer** with 128 neurons and **ReLU activation**.
- **Softmax output layer** for multi-class classification.

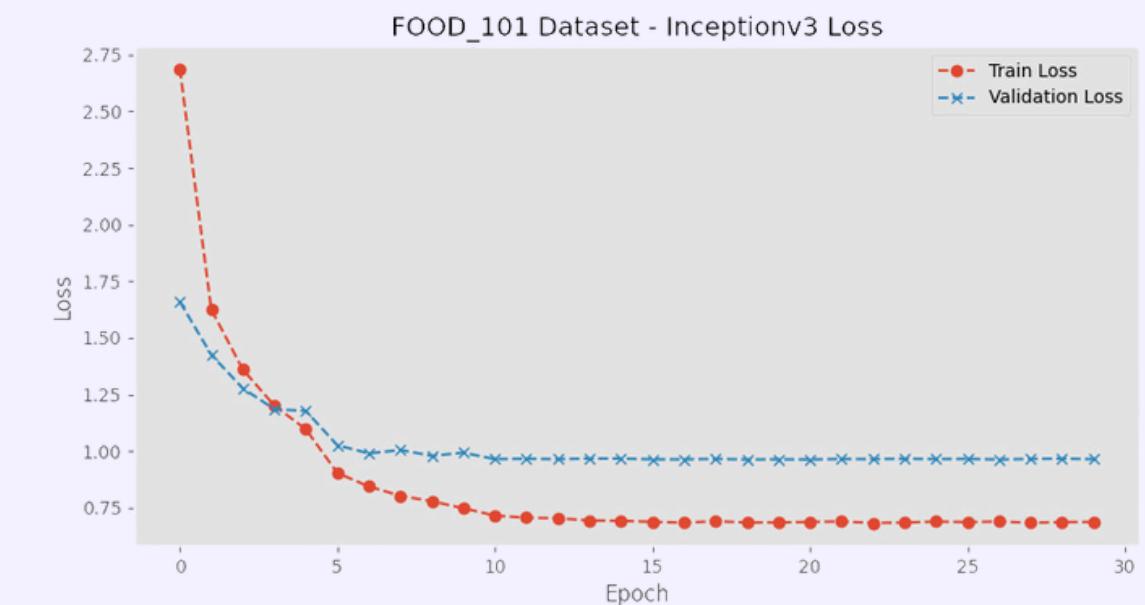
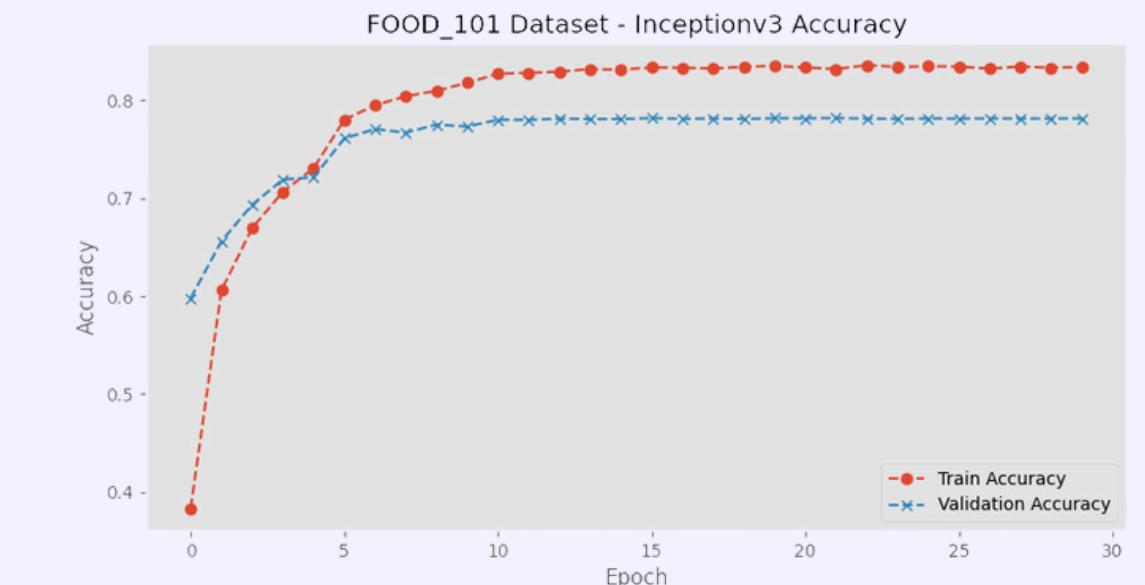
Data Augmentation: Applied rescaling, shear, zoom, and horizontal flipping to enhance model generalization

L2 kernel regularization and **dropout layers** to prevent overfitting.

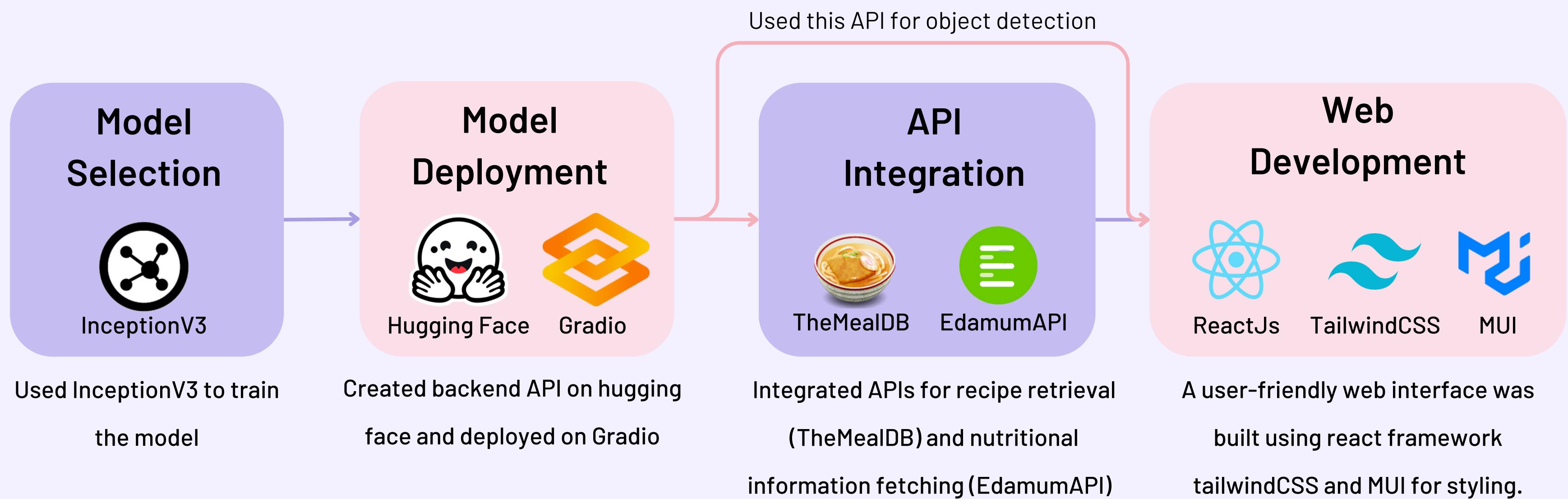
Optimization: Stochastic Gradient Descent (**SGD**) with a learning rate of 0.0001 and momentum of 0.9 for efficient training.

Employed **callbacks** for efficient training:

- **Model Checkpoint** to save the best-performing model.
- **CSV Logger** to monitor training and validation metricsz



METHODOLOGY



FoodScan

Home Features Diet Plan

EMPOWER YOUR FOOD CHOICES WITH FOODSCAN

Upload images of dishes to classify them, get detailed recipes, and explore their nutritional content. Compare against recommended daily intakes to make better dietary decisions effortlessly.

[Get Started](#)

FoodScan

Home Features Diet Plan

FEATURES

Discover How We Transform Your Food Experience

AI IMAGE ANALYSIS

Food Detection

Upload an image of any dish to classify it with a high level of accuracy using our machine learning model.

[Get Started →](#)

CULINARY INSPIRATION

Recipe Retrieval

Get a variety of recipes tailored to the identified dish and explore exciting cooking ideas.

[Get Started →](#)

HEALTH & NUTRITION

Nutritional Insights

Analyze macronutrients and micronutrients in detail, and compare with recommended daily intake values.

[Get Started →](#)

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RECIPE RETRIEVAL

Search for Food Ingredients

Search food: Kafeji

Kafeji

Ingredients:

- 5 Large Potatoes
- 2 tbs Olive Oil
- 500g Pumpkin
- 24 Skinned Eggs
- Pinch Salt
- 1 tbs Ras el hanout
- Pinch Pepper

Instructions:

Peel potatoes and cut into 5cm cubes. Pour 1-2 cm of olive oil into a large pan and heat up very hot. Fry potatoes until golden brown for 20 minutes. Turn them to the other side on the heat and remove seeds. Cut the peppers in half and remove seeds. Rub a little olive oil on them and turn the cut side down on a baking tray. Place them under a grill. Grill until they are dark and bubbly. While the peppers are still hot, put them into a plastic sandwich bag and seal it. Take them out after 15 minutes and remove skins. In the meantime, heat more olive oil in another pan. Peel the onions and cut into thin rings. Fry for 15 minutes until golden brown, turning them often. Add the Ras el hanout at the end. Cut the pumpkin into 5cm cubes and fry in the same pan you used for the potatoes for 10-15 minutes until it is soft and slightly browned. Place on kitchen paper. Pour the remaining olive oil out of the pan and put all the cooked vegetables into the pan and mix. Whisk eggs and pour them over the vegetables. Put the lid on the pan so that the eggs cook. Put the contents of the pan onto a large chopping board, add salt and pepper and chopped and mix everything with a big knife.

[GET NUTRITIONAL INFO](#)

FoodScan

Home Features Diet Plan

NUTRITION COMPARISON

Compare Food Nutritional Information

Enter Dish Name 1: Burrito

Enter Dish Name 2: Lamb Tzatziki Burgers

Ingredients:

Burrito: 1 Packet Filo Pastry, 150g Minced Beef, 150g Onion, 40g Oil, Dash Salt, Dash Pepper

Lamb Tzatziki Burgers: 25g Bulgur Wheat, 500g Lamb Mince, 1 tsp Cumin, 1 tsp Coriander, 1 tsp Paprika, 1 clove finely chopped Garlic, 1/2 cup plain yogurt, 2 lbs Mint

Nutritional Breakdown

Nutrient	Quantity	Unit
Energy	23.26	kcal
Total lipid (fat)	0.20	g
Fatty acids, total saturated	0.07	g

Nutritional Breakdown

Nutrient	Quantity	Unit
Energy	70.50	kcal
Total lipid (fat)	3.23	g
Fatty acids, total saturated	0.54	g

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Nutrient	Quantity	Unit
Folate, DFE	11.63	µg
Folic acid	0.00	µg
Vitamin B-12	0.00	µg
Vitamin D (D2 + D3)	0.00	µg
Vitamin E (alpha-tocopherol)	0.43	mg
Vitamin K (phylloquinone)	8.61	µg
Water	109.20	g

Nutritional Comparison Plot

Bigos (Hunters Stew) Baingan Bharta

Water (g), Energy (kcal), Folate, DFE (µg), Folic acid (µg), Vitamin A, RAE (µg), Vitamin E (alpha-tocopherol) (mg), Vitamin K (phylloquinone) (µg), Vitamin B-12 (µg), Vitamin D (D2 + D3) (µg), Sugars, total including NLEA (g), Carbohydrate, by difference (g), Carbohydrate, total dietary (g), Fiber, total dietary (g), Cholesterol (mg), Vitamin B-6 (mg), Vitamin B-3 (mg), Vitamin B-2 (mg), Vitamin B-1 (mg), Vitamin C (mg), Vitamin D (D2 + D3) (µg), Fatty acids, total trans (g), Fatty acids, total saturated (g), Fatty acids, monounsaturated (g), Fatty acids, polyunsaturated (g), Cholesterol (mg), Water (g), Energy (kcal), Folate, DFE (µg), Folic acid (µg), Vitamin A, RAE (µg), Vitamin E (alpha-tocopherol) (mg), Vitamin K (phylloquinone) (µg), Vitamin B-12 (µg), Vitamin D (D2 + D3) (µg), Sugars, total including NLEA (g), Carbohydrate, by difference (g), Carbohydrate, total dietary (g), Fiber, total dietary (g), Cholesterol (mg), Vitamin B-6 (mg), Vitamin B-3 (mg), Vitamin B-2 (mg), Vitamin B-1 (mg), Vitamin C (mg), Vitamin D (D2 + D3) (µg), Fatty acids, total trans (g), Fatty acids, total saturated (g), Fatty acids, monounsaturated (g), Fatty acids, polyunsaturated (g), Cholesterol (mg)

FoodScan

Home Features Diet Plan

Avocado-Onion Salad

Cuisine Type: american

Calories: 359

Ingredients:

- 1/2 large onion, thinly sliced
- 1 avocado, sliced (peeled and pitted)
- Salt and white pepper
- 1/2 lemon

[View Recipe & Instructions](#)

[View Recipe](#)

[View Recipe](#)

Egg-Free, Peanut-Free, Tree-Nut-Free, Soy-Free, Fish-Free, Red-Meat-Free, Lactose-Free, Wheat-Free, Corn-Free, Sesame-Free, Lupine-Free, Pea-Protein-Free, Mustard-Free, Sesame-Free, Lupine-Free, Mollusc-Free, Alcohol-Free, No oil added, Sulphite-Free, Immuno-Supportive

FoodScan

Home Features Diet Plan

DIET PLAN

Search & explore a variety of recipes at your fingertips

Cuisine Type: British

Health Labels: crustacean-free

Add Ingredient: Garlic

crustacean-free ×

Garlic ×

[Search Recipes](#)

Results

English Muffin Tid-Bits

Egg Muffins

Avocado Toasts

DEMO

Website

RESULT

- Food image classification with an accuracy of 78% on InceptionV3 model.
- Integrated with recipe and nutritional data for identified dishes.
- User-friendly nutrient comparison and diet planning features.

CONCLUSION

- Successfully integrated food detection, nutritional analysis, and dietary planning.
- Provides actionable insights for users to make healthier food choices.
- Demonstrates the practical application of APIs for seamless user experience.

FUTURE SCOPE

- Improve food classification accuracy with more diverse datasets.
- Expand support for additional dietary restrictions.
- Introduce real-time feedback on meal choices for instant recommendations.
- Add calorie tracker and meal history logs.

THANK YOU