



Food Image Classification Using Deep Learning

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PROJECT MOTIVATION

Exotic Travel Destinations = Exotic Food

Dry Sausage?



NO! This is a CHURCHKHELA!

Traditional Georgian
sausage-shaped candy
made of dried grape
syrup and nuts

OBJECTIVE

Create a Food Classification Web App

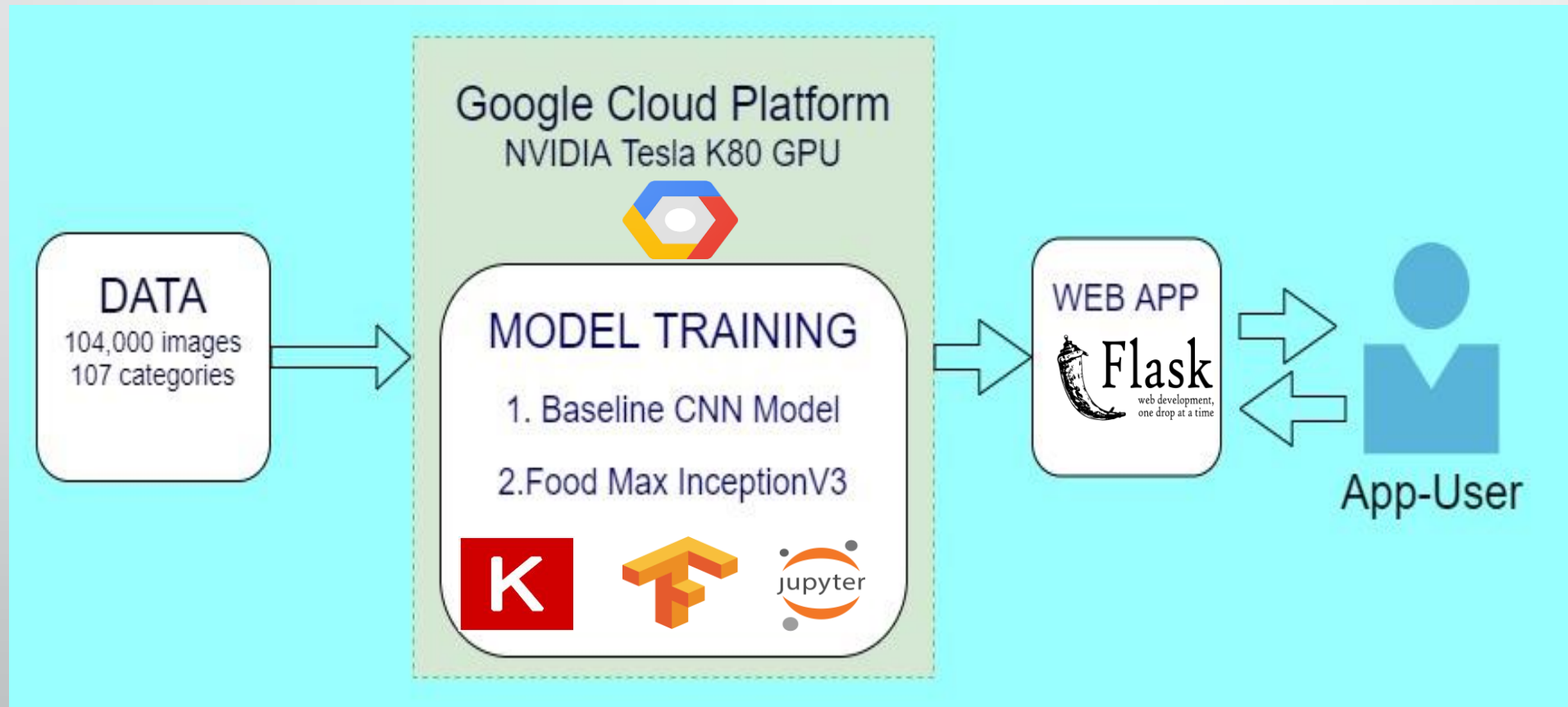


Potential Applications



- Calorie and nutritional value assessment
- Diet evaluation tools
- Managing food allergies
- Contextual marketing in social media

PROJECT PIPELINE



DATA

1. “Food-101” Kaggle Dataset

- 101,000 images
- 101 food categories



2. Images of traditional Georgian food, scraped using Bing Search Image API

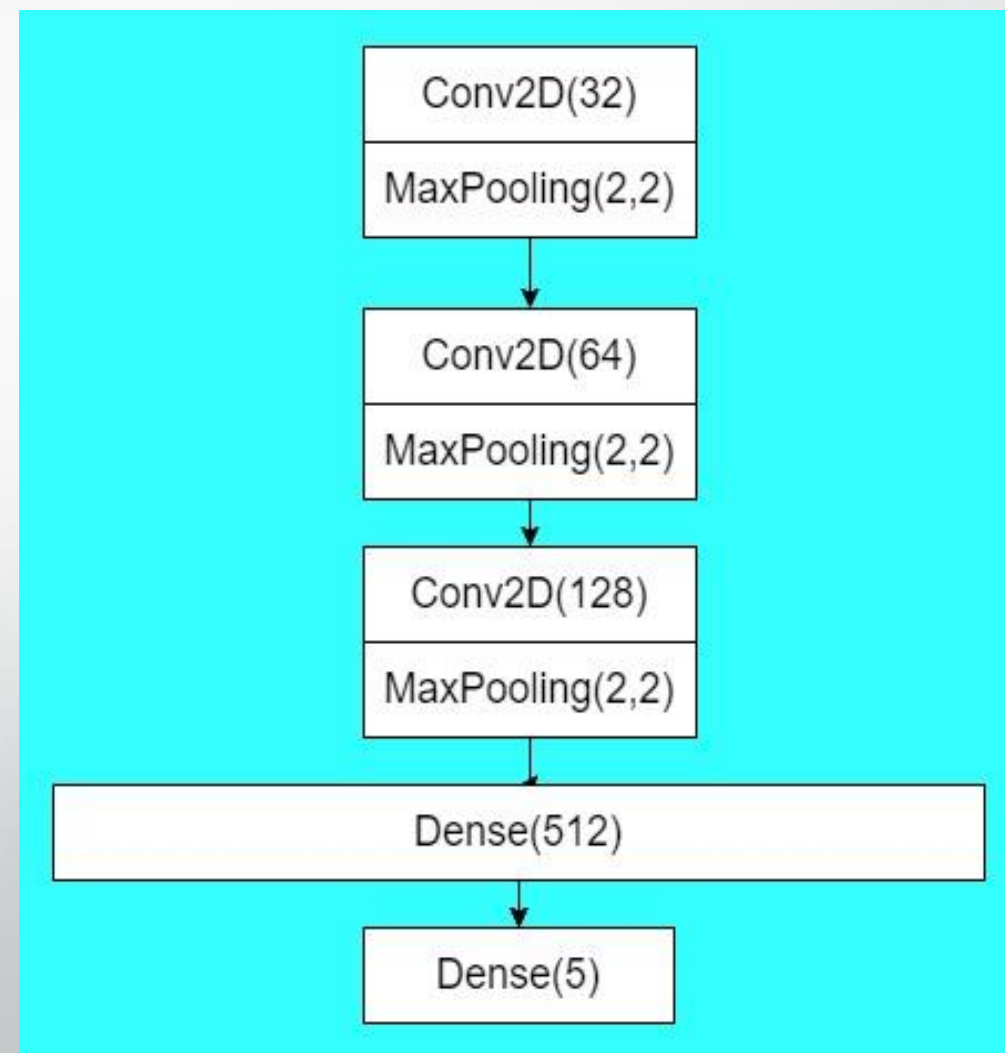
- ~ 3,000 images
- 6 categories



BASELINE MODEL

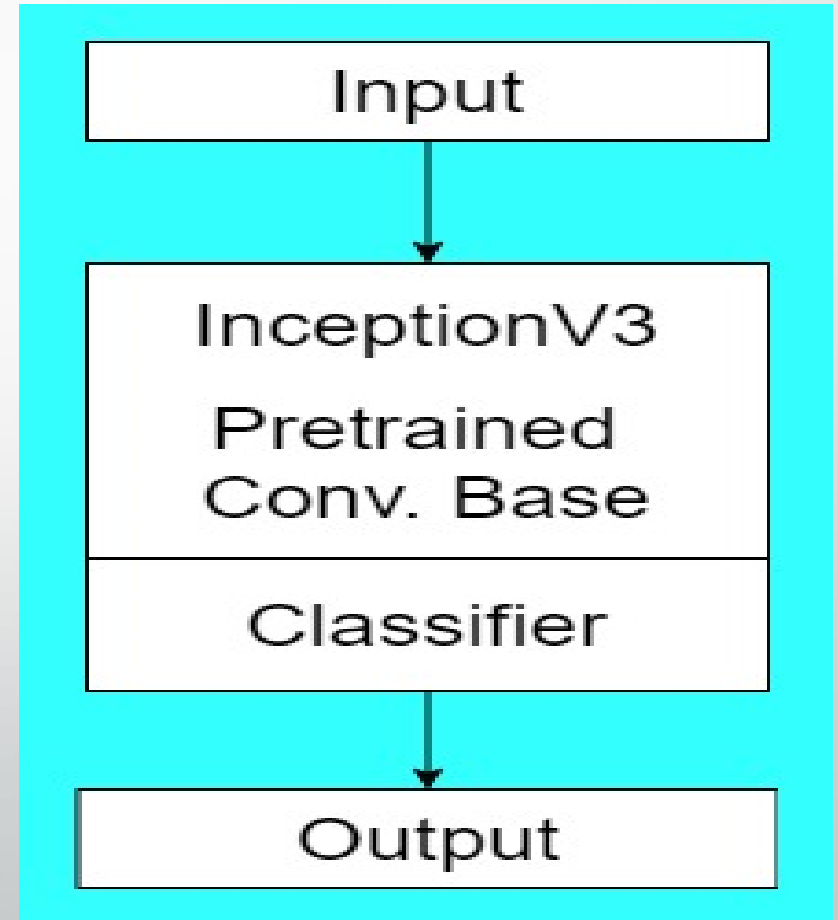
- 5 Food Categories
- Convolutional Neural Network
- Keras / TensorFlow
- Accuracy = 0.62

Needs to be improved!



FOOD_MAX InceptionV3

- Pretrained Base - InceptionV3
- Classifier : Two FC Layers
- Hyperparameter Optimization
- Image Augmentation
- 107 Food Categories
- Accuracy = 0.77
- Top 3 Accuracy =0.90



GEORGIAN FOOD



FOOD	PRECISION	RECALL
Khinkali	0.75	0.90
Chachapuri	0.79	0.96
Lobio	0.60	0.84

TEST IMAGES



Incorrect

1. Image /Labeling Quality
2. Category-Related Features



Correct



FLASK WEB APP

WHAT IS ON YOUR PLATE ?



UPLOAD IMAGE

Predict

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