

Recognizing Facial Expressions Using a Convolutional Neural Network Model

Learning facial expressions from an image



Team A:

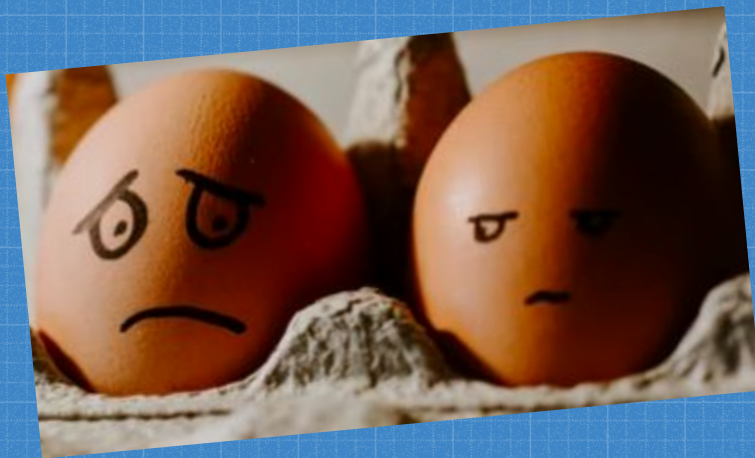
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Dataset Chosen

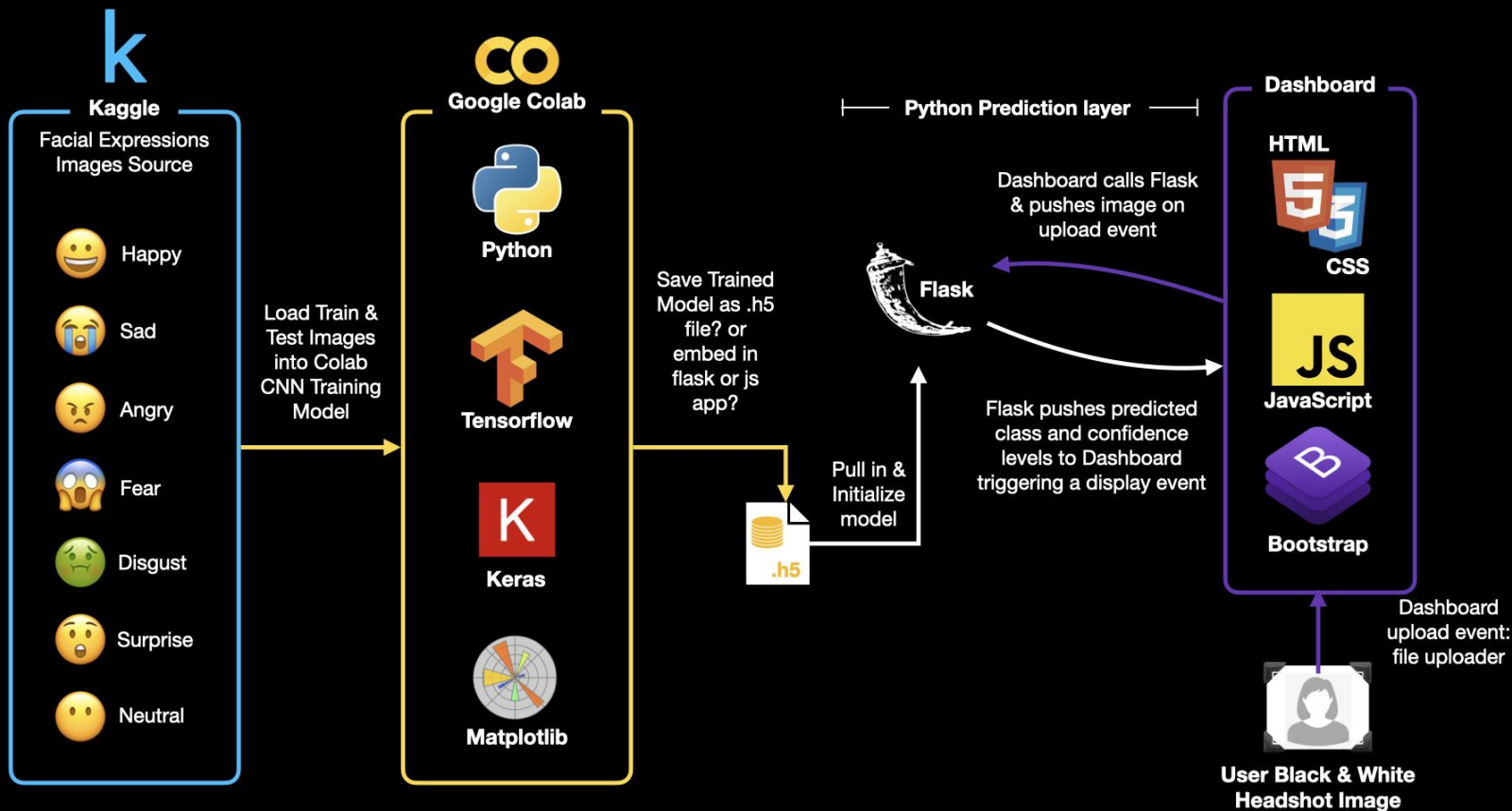
Kaggle dataset FER-2013 consists of 48x48 pixel grayscale images of faces.

The faces are centered and occupy about the same amount of space per image.

Training set: 28,709 images
Test set: 3,589 images



Recognizing Facial Expressions: Convolutional Neural Network (CNN) Model



Technologies

Google Colab:

- ★ Python
- ★ Tensorflow
- ★ Keras
- ★ Matplotlib

Python Prediction Layer:

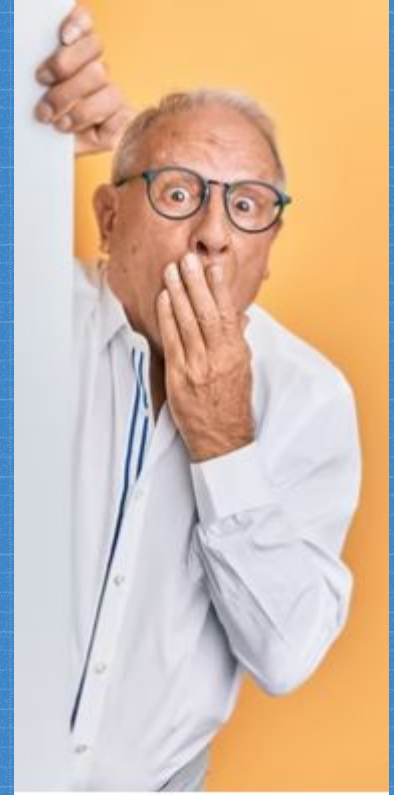
- ★ .h5 trained model
- ★ Flask

Dashboard:

- ★ HTML
- ★ CSS
- ★ JavaScript
- ★ Bootstrap

Machine Learning

Tensorflow will be used to build a CNN model that will be used to classify expressions of uploaded black/white headshots. Google Colab was used to code the model and import all necessary python libraries to build initial saved model in a hdf (.h5) file format.



Benefits of CNN Models

Automatically detects the important features without human supervision.

High accuracy rate for image classification and recognition.

CNN is also proven effective with video, pattern and face recognition.

The algorithm is fast and simple.

Limitations of CNN Models

Missing pixels can have a detrimental effect on the verification process of the model.

If the CNN has several layers then the training process takes a lot of time if the computer doesn't consist of a good GPU.

Requires a large dataset to process and train the neural network.

Project Deliverables

Segment 2: Transform the database into a working model, refine the ML model, perform analysis and create visuals for story as well as begin dashboard.

Segment 3: Finalize database and ML models, create draft presentation and create the dashboard.

Segment 4: Final updates to README.md and final touches to presentation and dashboard. Practice presentation.

Emoji The Possibilities

Image Selected



Upload New Picture

1. 😊
2. 😮
3. 😐

Expression	EmoScore
happy	56%
surprise	23%
neutral	22%

Functionality

The user will click on a button to upload a photo.

The upload will be the trigger to run the model

OR

The user will click a button to run the model

End Result:

The top 3 emotion predictions will be returned.