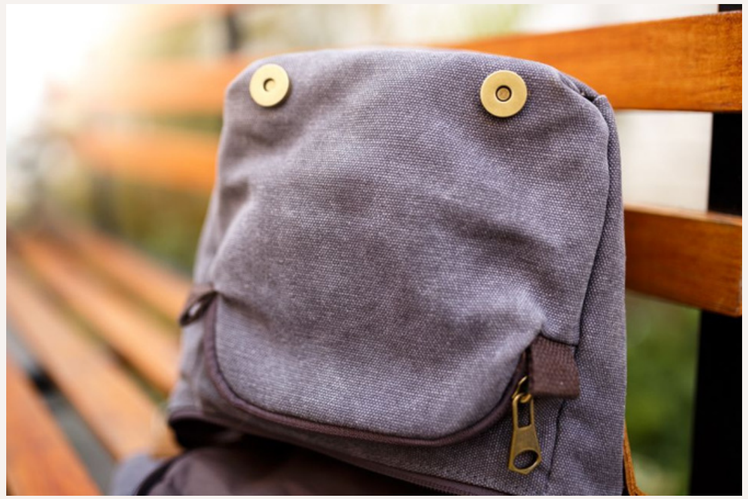
Face Pareidolia

Winter 2021



GOAL

"Analyse How Human Brain and Neural Networks Answers to Parei Faces and How Can we Train a Model to Get the Best Performance Near Human Brain."

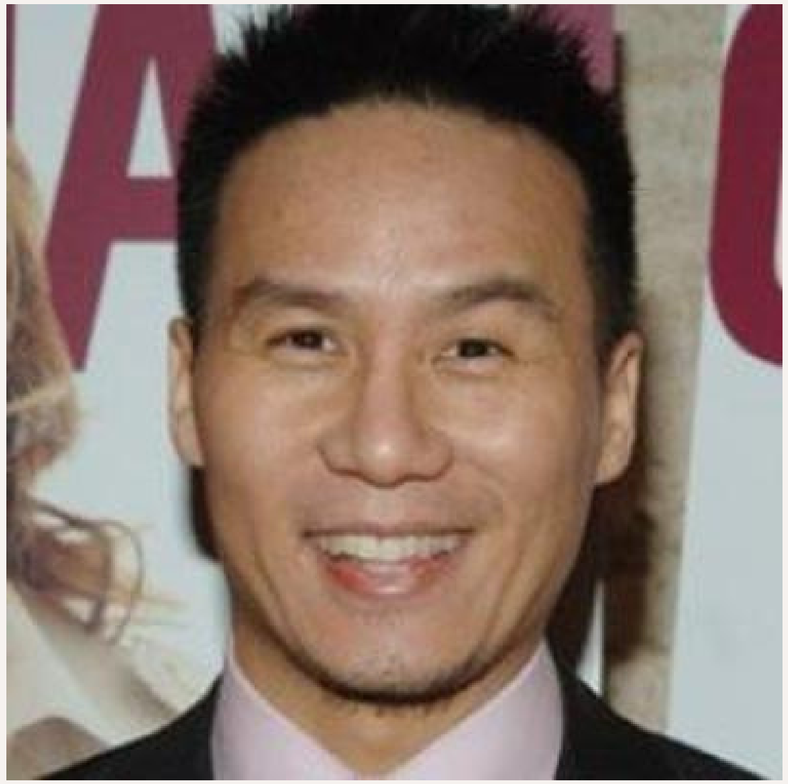
Two Main phases

Human Answers

Analyzing answers given to parei faces by humans.

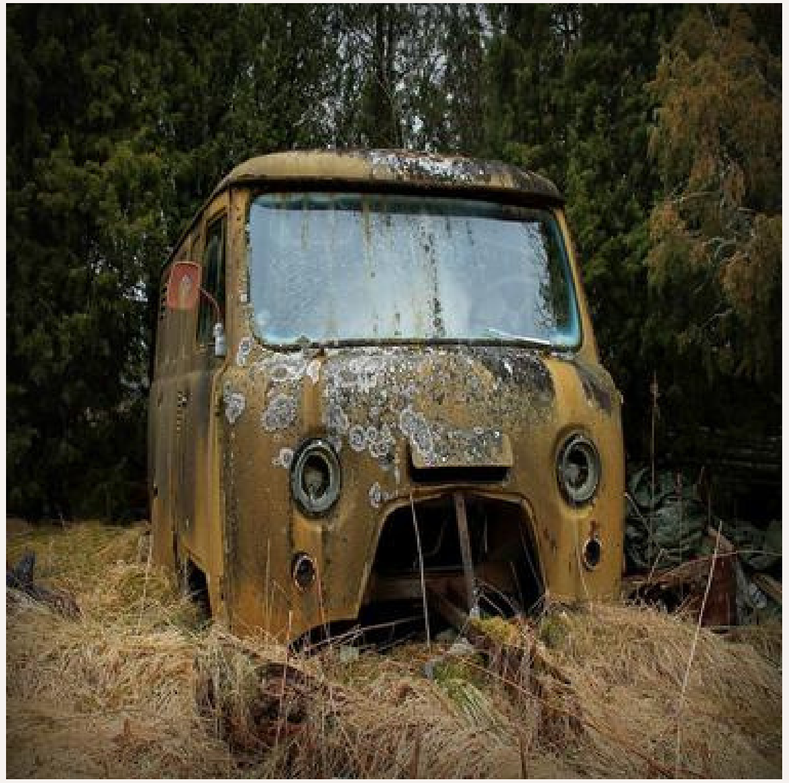
Model Answers

Analyse answers given to parei faces by Model. retrain and make the performance near to brain results.

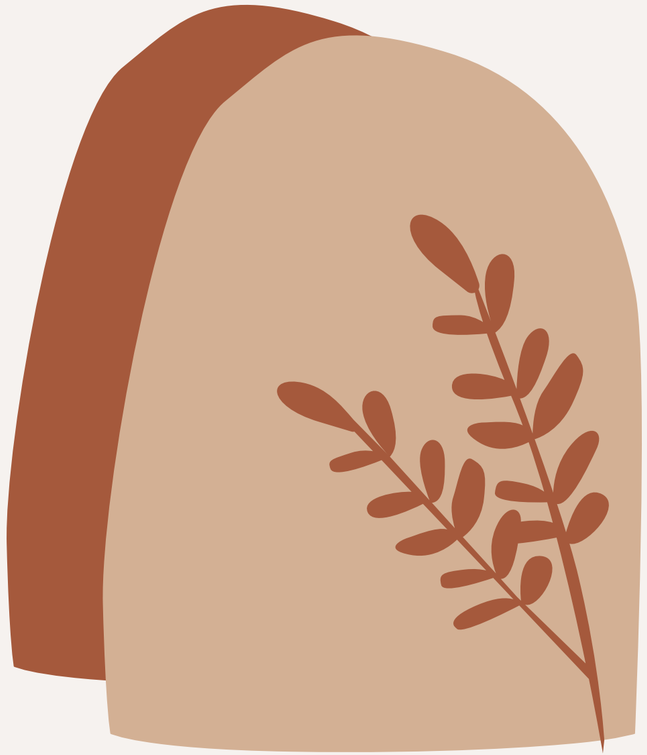


1- Face images

2- Orig images



1- Matched images

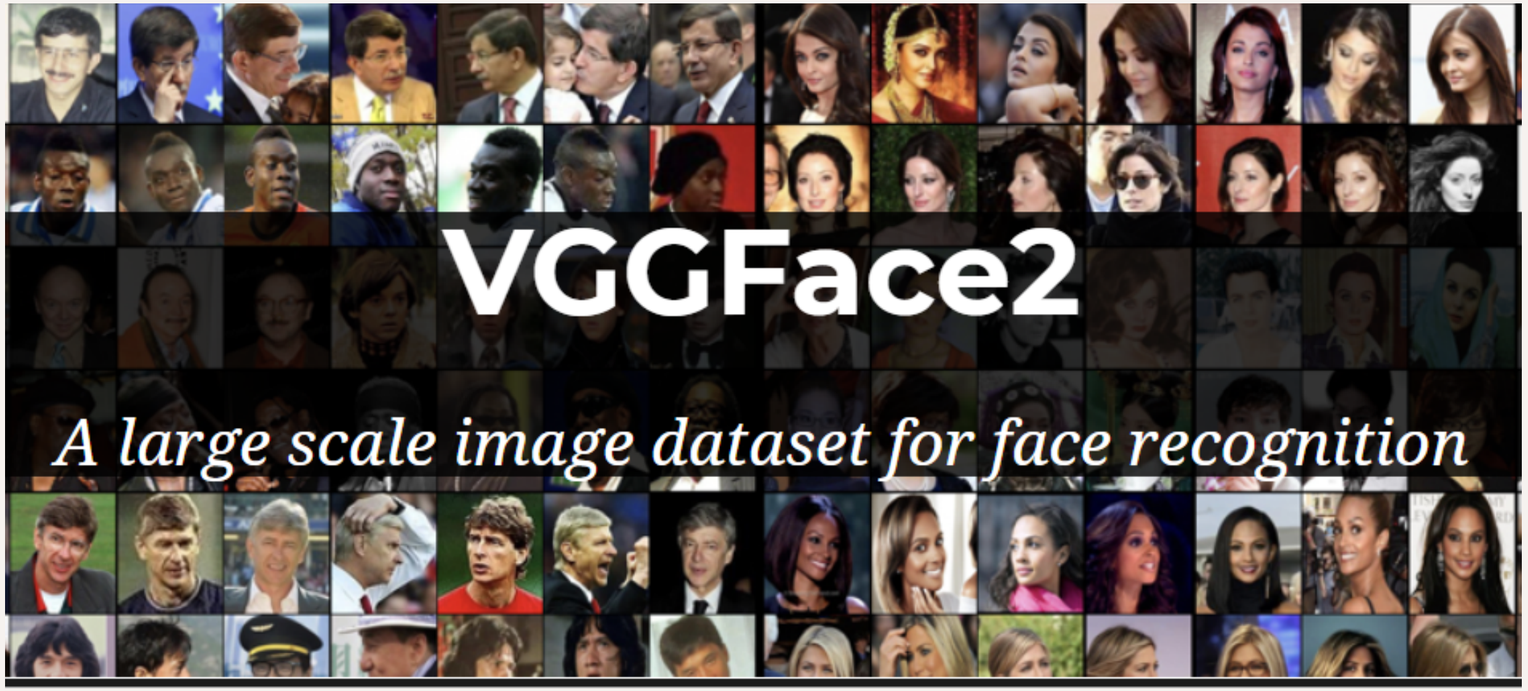


Training Approach

we used the hugest dataset with most classes,so we can simulate human brain more eactly. imagenet doesnt contain a "face" class. we need to add this class with exact training samples to others.

The Dataset

Contains about 9200 faces. we choose randomly 1300 images for train containing 80 black in training and 8 of 181 in testing.



Training Results

- ✓ Trining ResNet50. overal 46.25 top-1. 86.74 on face.
- ✗ problem:
  Some hyperparameters were not exactly set by the paper.

Training Results

- ✔ Fine Tuning ResNet50. overal 70.15 top-1. 91.17 on face.
- ✘ problem:
  Fine Tuning.

Training Results

- Training from base Different architectures.
- problems:
  - not stable accessible GPU
  - low GPU Ram
  - long time training because of weak GPUs.
  - not stable Power
  - some function is papers not described but used.
  - many different training on papers to get results because of random initializing
  - Lack of HDD or server reset like Google Colab
  - ...

Least Requirements:

- **Fully accessible and maintained GPU**
- **24GB RAM for GPU**
- **2080ti or Parallel training**
- **250 GB HDD**