

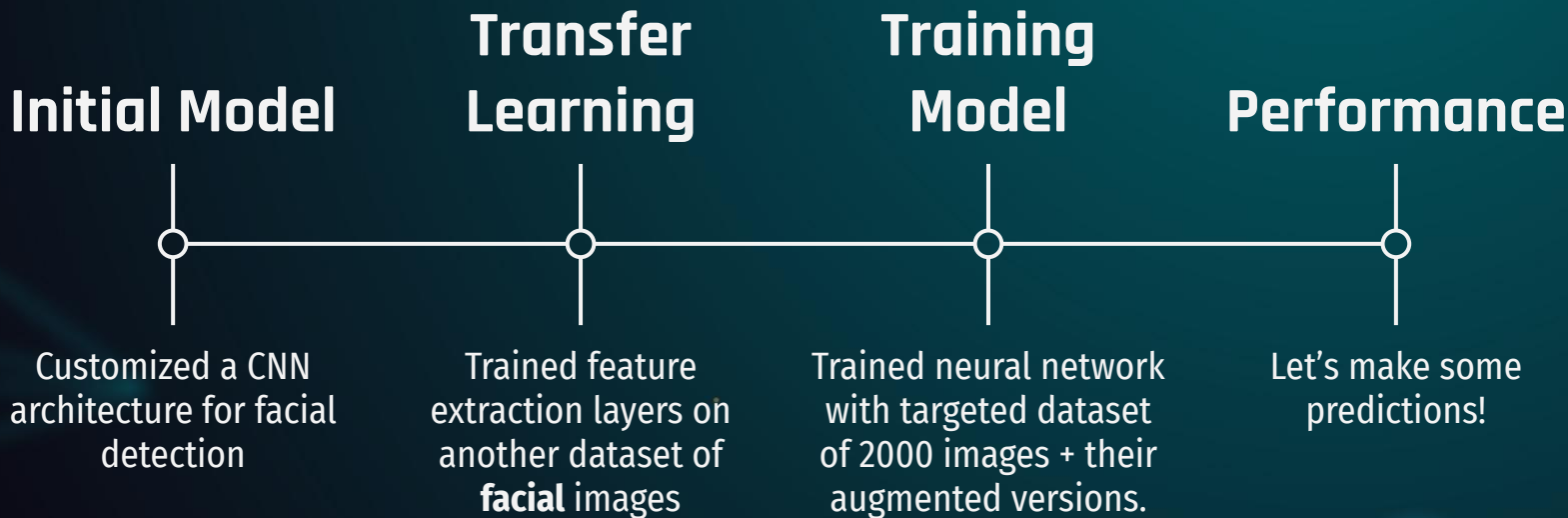


RvF Faces



Is this image
photoshopped?

Summary of Our Project



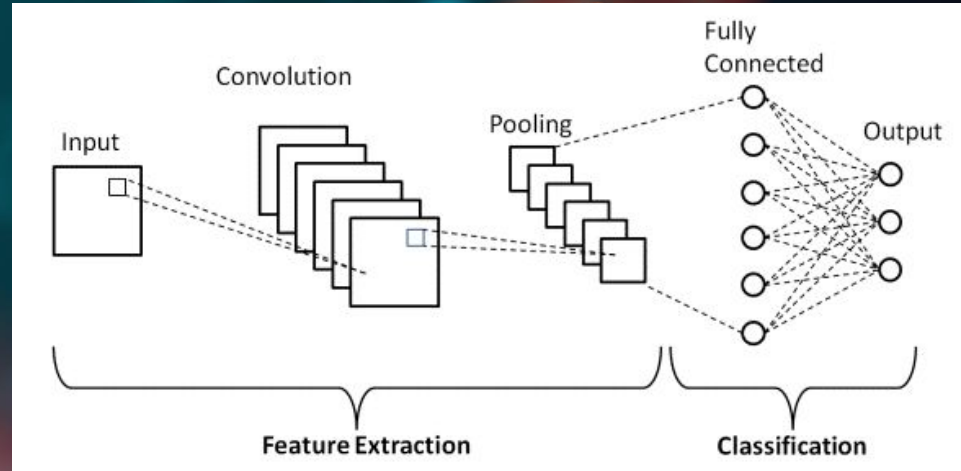
Model Architecture

6 Convolutional Layers → Batch Normalization
→ ReLu Activation → Max Pooling

Flatten

3 Dense Layers + Relu Activation

Classification



Performance Evaluation

C

Criterion

Cross Entropy Loss

A

Accuracy

O

Optimizer

Adam

- Learning Rate = $1e-3$

Great power comes with great... overfitting!

```
Epoch 9: Loss - (Train 0.01249/Test 0.02, Accuracy - (Train 0.84615/Test 0.59)
100%|██████████| 46/46 [00:19<00:00, 2.41it/s]
Epoch 10: Loss - (Train 0.01257/Test 0.03, Accuracy - (Train 0.80042/Test 0.57)
100%|██████████| 46/46 [00:19<00:00, 2.39it/s]
Epoch 11: Loss - (Train 0.00853/Test 0.03, Accuracy - (Train 0.90229/Test 0.59)
100%|██████████| 46/46 [00:18<00:00, 2.45it/s]
```

```
Epoch 17: Loss - (Train 0.00441/Test 0.04, Accuracy - (Train 0.94812/Test 0.61)
100%|██████████| 46/46 [00:18<00:00, 2.45it/s]
Epoch 18: Loss - (Train 0.00581/Test 0.05, Accuracy - (Train 0.92833/Test 0.58)
100%|██████████| 46/46 [00:18<00:00, 2.48it/s]
Epoch 19: Loss - (Train 0.00292/Test 0.04, Accuracy - (Train 0.96451/Test 0.60)
100%|██████████| 46/46 [00:19<00:00, 2.38it/s]
Epoch 20: Loss - (Train 0.00381/Test 0.04, Accuracy - (Train 0.95700/Test 0.62)
100%|██████████| 46/46 [00:18<00:00, 2.45it/s]
```


Model Architecture 2

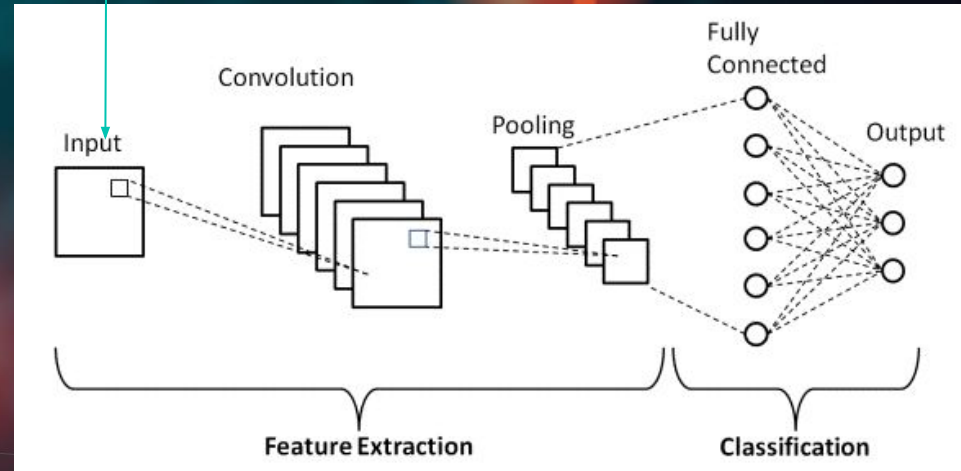
6 Convolutional Layers → Batch Normalization
→ ReLu Activation → **DropOut** → Max Pooling

Flatten

3 Dense Layers + Relu Activation →
DropOut

Classification

Augmentation



Transfer Learning

Initial Architecture

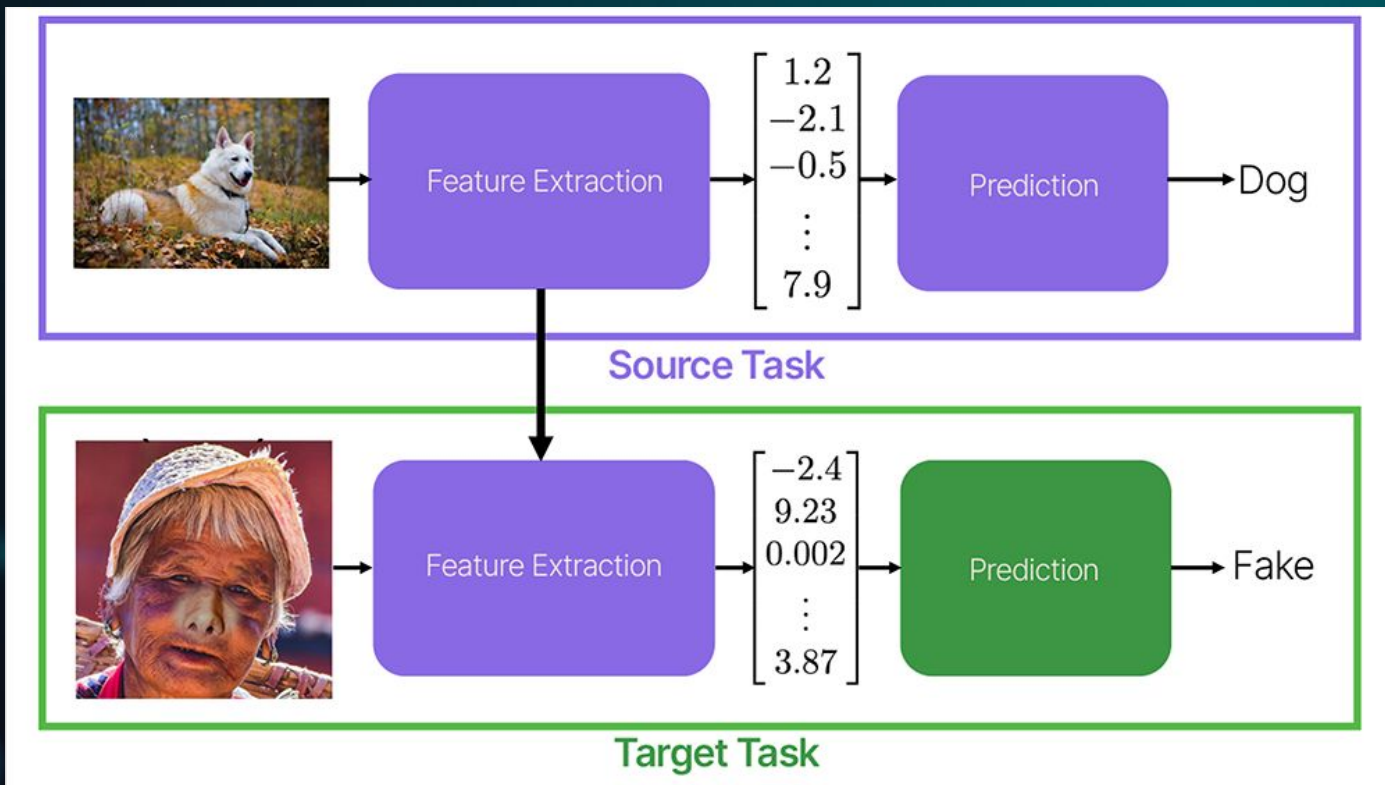
TF1
Over **400,000** images
of faces

TF2
Over **A MILLION** images
of **augmented** faces



Bigger
Dataset

In our case we used
dataset for
classifying male vs
female.



Transfer Learning GradCam

Focus on certain features of the face and also the surrounding...

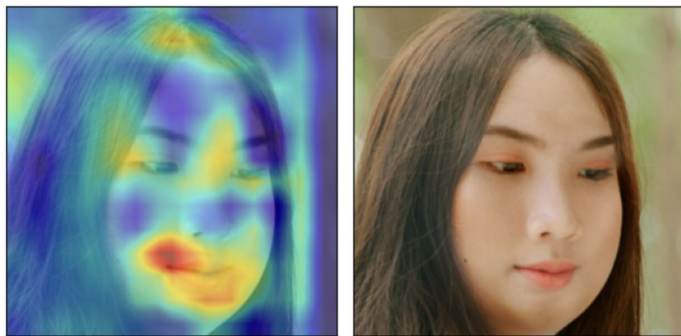
easy_107_1011.jpg
Predicted Label: fake
Actual Label: fake



Transfer Learning GradCam

Over **a million** images of
augmented faces

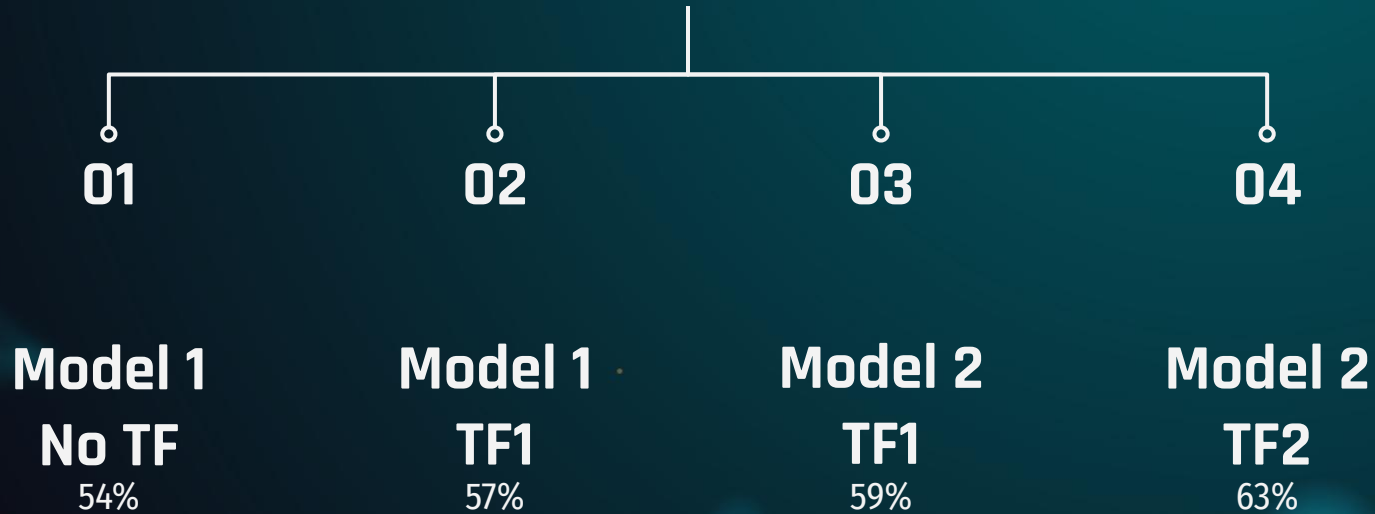
easy_100_1111.jpg
Predicted Label: fake
Actual Label: fake



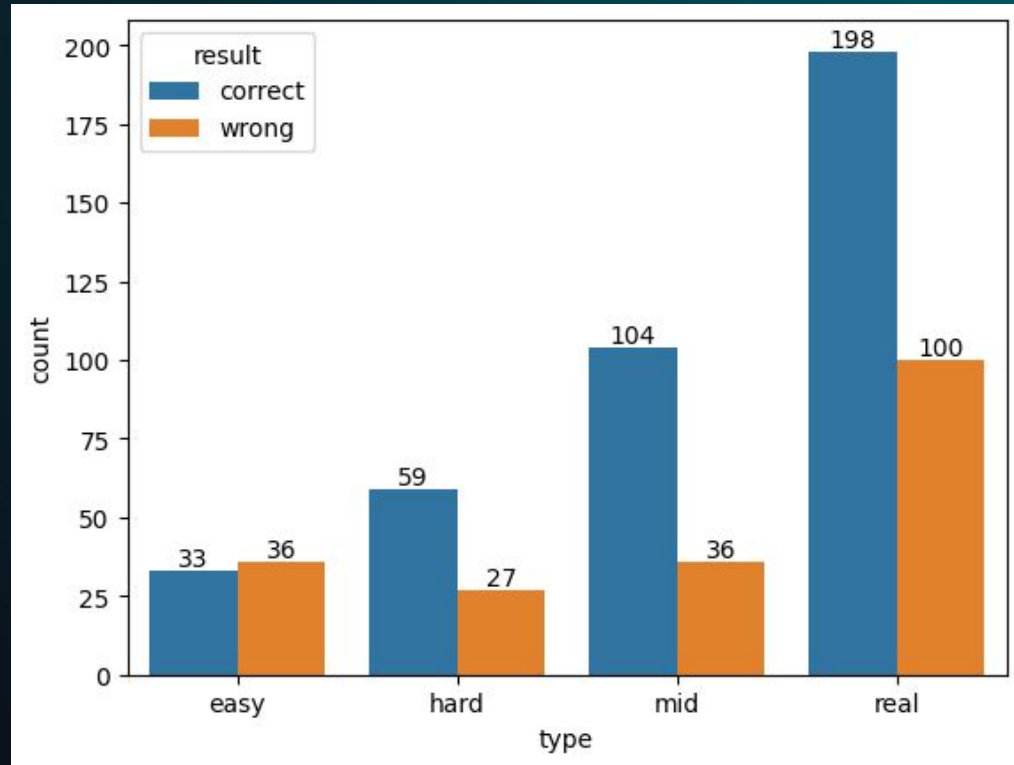
easy_45_1010.jpg
Predicted Label: fake
Actual Label: fake



Result Accuracy

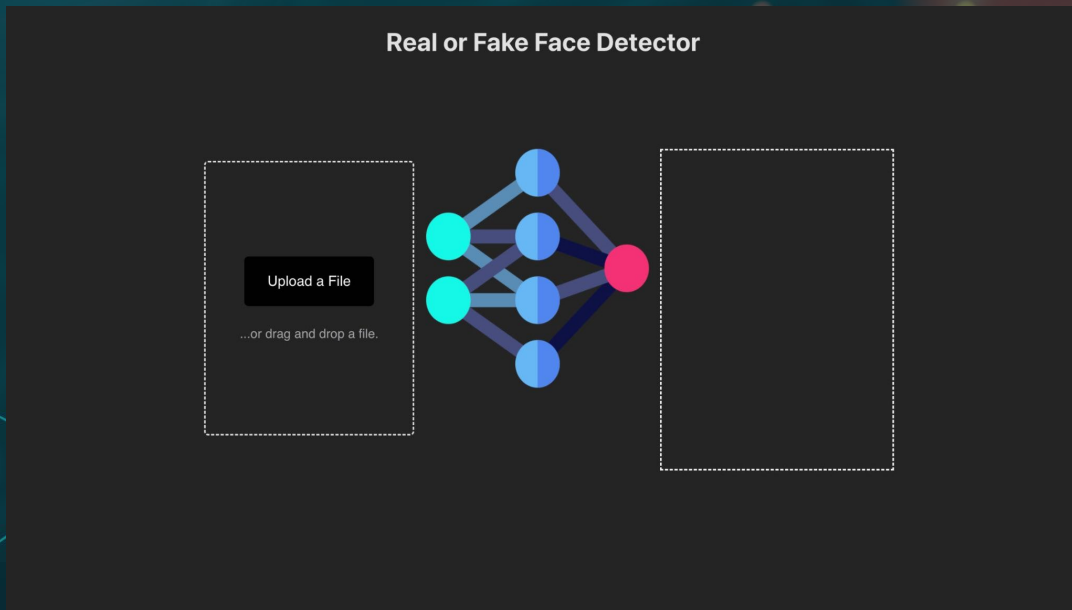


Model TF2 Performance



In Progress

Front-end for uploading images and send to servers for processing and making a prediction.
React + Express that spawns a python process.





Thank You