TensorFlow (Face Recognition)

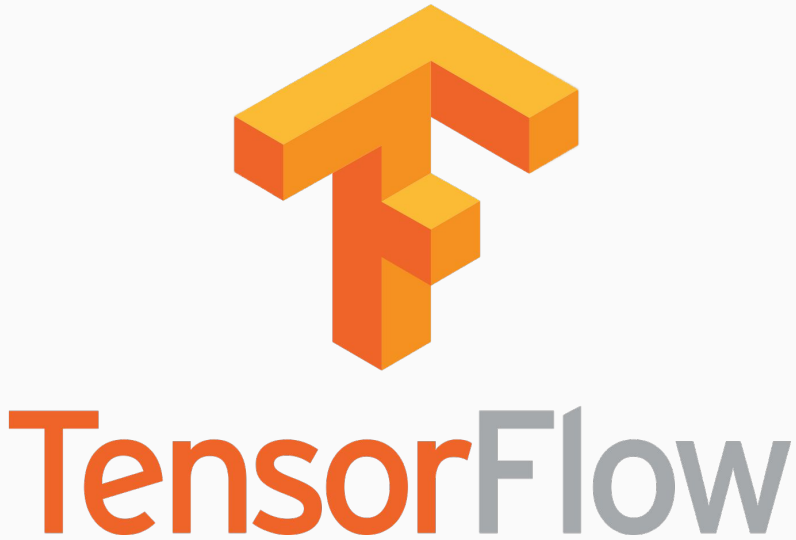
Rossukhon

Growth Session #4 - June 15-16 2017

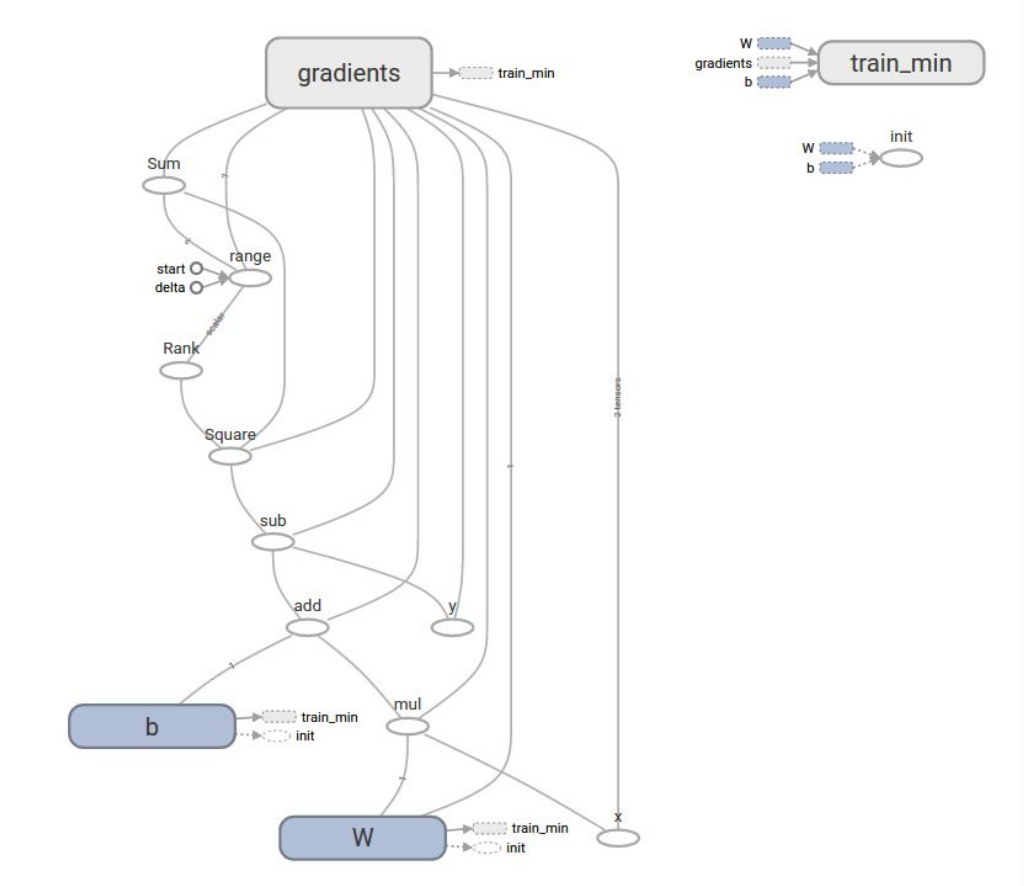
Objectives

- Explore Machine learning with TensorFlow
- Building apps to do face recognition

TensorFlow



TensorFlow


gradients
train_min
W
gradients
b
train_min
W
b
init
Sum
range
start
delta
Rank
Square
sub
add
y
b
train_min
init
mul
W
train_min
init
x

Facenet

TensorFlow implementation of the face recognizer

Pre-trained models

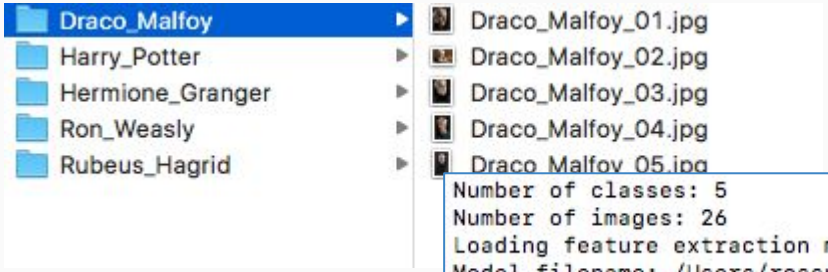
Model name	LFW accuracy	Training dataset	Architcture
20170511-185253	0.987	CASIA-WebFace	Inception ResNet v1
20170512-110547	0.992	MS-Celeb-1M	Inception ResNet v1

https://github.com/davidsandberg/facenet

Facenet

Training dataset

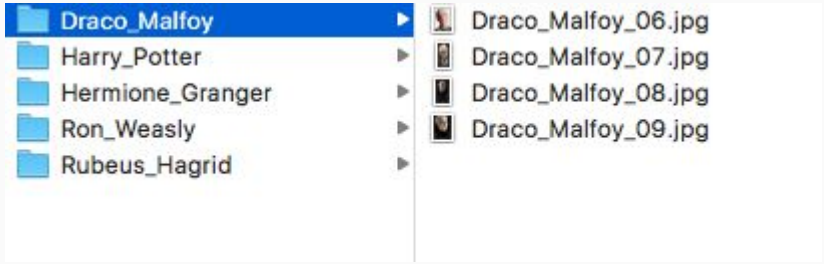
python src/classifier.py TRAIN (model) (output file .pkl) ...




```
Number of classes: 5
Number of images: 26
Loading feature extraction model
Model filename: /Users/rossukhon/OtherProjects/TensorFlow/20170512-110547/20170512-110547.pb
Calculating features for images
Training classifier
Saved classifier model to file "/Users/rossukhon/datasets/classifier.pkl"
```

Testing dataset

python src/classifier.py CLASSIFY (model) (classifier .pkl) ...



Facenet

Testing result

```
Number of classes: 5
Number of images: 20
Loading feature extraction model
Model filename: /Users/rossukhon/OtherProjects/TensorFlow/20170512-110547/20170512-110547.pb
Calculating features for images
Testing classifier
Loaded classifier model from file "/Users/rossukhon/datasets/classifier.pkl"
  0  Draco Malfoy: 0.653
  1  Draco Malfoy: 0.508
  2  Draco Malfoy: 0.622
  3  Draco Malfoy: 0.750
  4  Harry Potter: 0.438
  5  Harry Potter: 0.532
  6  Ron Weasly: 0.429
  7  Harry Potter: 0.630
  8  Hermione Granger: 0.630
  9  Hermione Granger: 0.555
 10  Hermione Granger: 0.586
 11  Ron Weasly: 0.424
 12  Ron Weasly: 0.603
 13  Ron Weasly: 0.428
 14  Hermione Granger: 0.498
 15  Hermione Granger: 0.376
 16  Rubeus Hagrid: 0.677
 17  Rubeus Hagrid: 0.645
 18  Rubeus Hagrid: 0.685
 19  Rubeus Hagrid: 0.692
Accuracy: 0.800
```

Imagenet

https://www.tensorflow.org/tutorials/image_retraining

http://image-net.org/

Imagenet

Retrain the model

```
bazel build tensorflow/examples/image_retraining:retrain

bazel-bin/tensorflow/examples/image_retraining/retrain --image_dir (training dataset directory)
```

Use the model

```
bazel build tensorflow/examples/label_image:label_image

bazel-bin/tensorflow/examples/label_image/label_image \
--graph=/tmp/output_graph.pb --labels=/tmp/output_labels.txt \
--output_layer=final_result \
--image=(image to identify)
```

Achievements and progress

- Training model
- Integrate the trained model to Android app (still used their sample)

Thanks!

Contact Nimbl3

hello@nimbl3.com

399 Sukhumvit Road, Interchange 21
Klongtoey nua, Wattana
Bangkok 10110

20th Floor, Central Tower
28 Queen's Road
Central, Hong Kong

nimbl3.com