

Final Presentation

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Problem

- Build an image classifier that return which presidents image was uploaded

Solution

- OpenFace
- <https://cmusatyalab.github.io/openface/>
- open source implementation with deep neural networks trained with millions of images































how does it work

- OpenFace is available as docker image
- Make folders with Training-images

▶ barack-obama	Jan 1, 2018 at 3:52 PM
▶ abraham-lincoln	Jan 1, 2018 at 3:23 PM
▶ andrew-jackson	Jan 1, 2018 at 3:14 PM
▶ andrew-jackson	Jan 1, 2018 at 3:14 PM
▶ bill-clinton	Jan 1, 2018 at 3:50 PM
▶ calvin-coolidge	Jan 1, 2018 at 3:38 PM
▶ theodore-roosevelt	Jan 1, 2018 at 3:38 PM
▶ donald-trump	Jan 1, 2018 at 3:53 PM
▶ zwigut-o-eisenhower	Jan 1, 2018 at 3:41 PM
▶ franklin-d-roosevelt	Jan 1, 2018 at 3:38 PM
▶ franklin-pierce	Jan 1, 2018 at 3:21 PM
▶ george-h-w-bush	Jan 1, 2018 at 3:49 PM
▶ george-w-bush	Jan 1, 2018 at 3:51 PM
▶ george-washington	Jan 1, 2018 at 3:08 PM
▶ grover-tyler	Jan 1, 2018 at 3:40 PM
▶ grover-cleveland	Jan 1, 2018 at 3:29 PM
▶ harry-s-truman	Jan 1, 2018 at 3:39 PM
▶ herbert-hoover	Jan 1, 2018 at 3:57 PM
▶ james-buchanan	Jan 1, 2018 at 3:22 PM
▶ james-garfield	Jan 1, 2018 at 3:27 PM
▶ james-k-polk	Jan 1, 2018 at 3:18 PM
▶ james-madison	Jan 1, 2018 at 3:10 PM
▶ james-monroe	Jan 1, 2018 at 3:11 PM
▶ jerry-martin	Jan 1, 2018 at 3:48 PM
▶ john-adams	Jan 1, 2018 at 3:08 PM
▶ john-kennedy	Jan 1, 2018 at 3:42 PM
▶ john-quincy-adams	Jan 1, 2018 at 3:13 PM
▶ john-tyler	Jan 1, 2018 at 3:17 PM
▶ jackson-o-johnson	Jan 1, 2018 at 3:43 PM
▶ martin-van-buren	Jan 1, 2018 at 3:15 PM
▶ millard-fillmore	Jan 1, 2018 at 3:20 PM
▶ roger	Jan 1, 2018 at 3:46 PM
▶ richard-nixon	Jan 1, 2018 at 3:44 PM
▶ theodore-roosevelt	Jan 1, 2018 at 3:31 PM
▶ thomas-jefferson	Jan 1, 2018 at 3:08 PM
▶ ulysses-s-grant	Jan 1, 2018 at 3:25 PM
▶ warren-g-harding	Jan 1, 2018 at 3:35 PM
▶ william-henry-harrison	Jan 1, 2018 at 3:10 PM
▶ william-howard-taft	Jan 1, 2018 at 3:32 PM
▶ william-mckinley	Jan 1, 2018 at 3:30 PM
▶ woodrow-wilson	Jan 1, 2018 at 3:22 PM
▶ zachary-taylor	Jan 1, 2018 at 3:19 PM

how does it work

- Must include multiple examples of the person

 download (1).jpeg	Jan 1, 2018 at 3:52 PM
 download (2).jpeg	Jan 1, 2018 at 3:52 PM
 download (3).jpeg	Jan 1, 2018 at 3:52 PM
 download (4).jpeg	Jan 1, 2018 at 3:52 PM
 download (5).jpeg	Jan 1, 2018 at 3:52 PM
 download (6).jpeg	Jan 1, 2018 at 3:52 PM
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 images (13).jpeg	Jan 1, 2018 at 3:52 PM
 images (14).jpeg	Jan 1, 2018 at 3:52 PM
 images.jpeg	Jan 1, 2018 at 3:52 PM

How does it work

- Detection and alignment of images

```
./util/align-dlib.py ./training-images/  
align outerEyesAndNose ./aligned-images/ --size 96
```

- Generate alignment of images

```
./batch-represent/main.lua -outDir  
./generated-embeddings/ -data ./aligned-images/
```

- Train face detection model

```
./demos/classifier.py train ./generated-embeddings/
```

Test it out

- Call the classifier with new image

```
./demos/classifier.py infer  
./generated-embeddings/classifier.pkl bush.jpg
```

- Detected with 65% confidence.

```
=== /host/Users/jazz/Desktop/examples/bush.jpg ===  
Predict george-h-w-bush with 0.65 confidence.
```

```
root@0735a9790131:~/openface# ./demos/classifier.py infer ./generated-embeddings/classifier.pkl /host/Users/jazz/Desktop/examples/bush.jpg  
/root/.local/lib/python2.7/site-packages/sklearn/lda.py:4: DeprecationWarning: lda.LDA has been moved to discriminant_analysis.LinearDiscriminantAnalysis in 0.17 and will be removed in 0.19  
  "in 0.17 and will be removed in 0.19", DeprecationWarning)  
  
=== /host/Users/jazz/Desktop/examples/bush.jpg ===  
Predict george-h-w-bush with 0.65 confidence.  
root@0735a9790131:~/openface#
```

Sources

- Followed the following tutorial: <https://medium.com/@ageitgey/machine-learning-is-fun-part-4-modern-face-recognition-with-deep-learning-c3cffc121d78>
- Scrapped images from Google Images
- Docker Image: <https://cloud.docker.com/swarm/blaze2236/repository/docker/blaze2236/ga-project-general>