
OpenFace Documentation

Release 0.1.1

Carnegie Mellon University

Jun 18, 2018

Contents

1	openface package	3
1.1	openface.AlignDlib class	3
1.2	openface.TorchNeuralNet class	5
1.3	openface.data module	6
1.4	openface.helper module	8
2	Indices and tables	9
	Python Module Index	11

- The code is available on GitHub at [cmusatyalab/openface](https://github.com/cmusatyalab/openface)
- The main website is available at <http://cmusatyalab.github.io/openface>.

Contents:

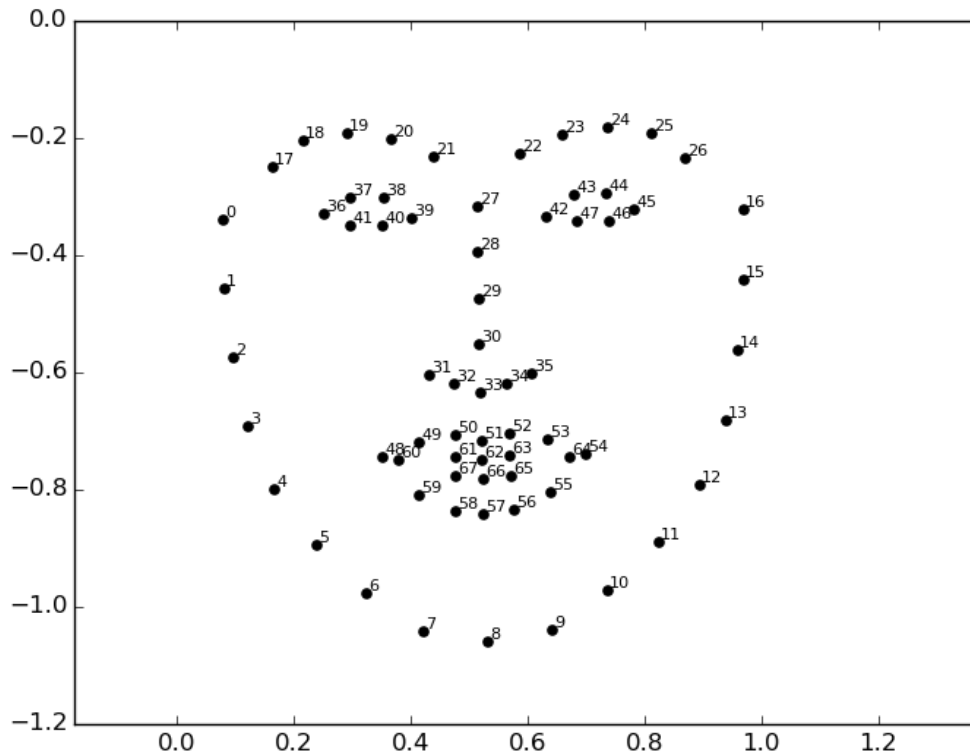
1.1 openface.AlignDlib class

class openface.**AlignDlib** (*facePredictor*)

Use dlib's landmark estimation to align faces.

The alignment preprocess faces for input into a neural network. Faces are resized to the same size (such as 96x96) and transformed to make landmarks (such as the eyes and nose) appear at the same location on every image.

Normalized landmarks:



Instantiate an ‘AlignDlib’ object.

Parameters `facePredictor` (*str*) – The path to dlib’s

`INNER_EYES_AND_BOTTOM_LIP = [39, 42, 57]`

Landmark indices.

`OUTER_EYES_AND_NOSE = [36, 45, 33]`

`align` (*imgDim*, *rgbImg*, *bb=None*, *landmarks=None*, *landmarkIndices=INNER_EYES_AND_BOTTOM_LIP*)

Transform and align a face in an image.

Parameters

- **imgDim** (*int*) – The edge length in pixels of the square the image is resized to.
- **rgbImg** (*numpy.ndarray*) – RGB image to process. Shape: (height, width, 3)
- **bb** (*dlib.rectangle*) – Bounding box around the face to align. Defaults to the largest face.
- **landmarks** (*list of (x,y) tuples*) – Detected landmark locations. Landmarks found on *bb* if not provided.

- **landmarkIndices** (*list of ints*) – The indices to transform to.
- **skipMulti** (*bool*) – Skip image if more than one face detected.

Returns The aligned RGB image. Shape: (imgDim, imgDim, 3)

Return type numpy.ndarray

findLandmarks (*rgbImg, bb*)

Find the landmarks of a face.

Parameters

- **rgbImg** (*numpy.ndarray*) – RGB image to process. Shape: (height, width, 3)
- **bb** (*dlib.rectangle*) – Bounding box around the face to find landmarks for.

Returns Detected landmark locations.

Return type list of (x,y) tuples

getAllFaceBoundingBoxes (*rgbImg*)

Find all face bounding boxes in an image.

Parameters **rgbImg** (*numpy.ndarray*) – RGB image to process. Shape: (height, width, 3)

Returns All face bounding boxes in an image.

Return type dlib.rectangles

getLargestFaceBoundingBox (*rgbImg, skipMulti=False*)

Find the largest face bounding box in an image.

Parameters

- **rgbImg** (*numpy.ndarray*) – RGB image to process. Shape: (height, width, 3)
- **skipMulti** (*bool*) – Skip image if more than one face detected.

Returns The largest face bounding box in an image, or None.

Return type dlib.rectangle

1.2 openface.TorchNeuralNet class

```
class openface.TorchNeuralNet (self, model=defaultModel, imgDim=96,  
                               cuda=False)
```

Use a [Torch](#) subprocess for feature extraction.

It also can be used as context manager using *with* statement.

```
with TorchNeuralNet(model=model) as net:  
    # code
```

or

```
net = TorchNeuralNet(model=model)  
with net:  
    # use Torch's neural network
```

In this way Torch processes will be closed at the end of the *with* block. [PEP 343](#)

Instantiate a 'TorchNeuralNet' object.

Starts `openface_server.lua` as a subprocess.

Parameters

- **model** (*str*) – The path to the Torch model to use.
- **imgDim** (*int*) – The edge length of the square input image.
- **cuda** (*bool*) – Flag to use CUDA in the subprocess.

defaultModel = `'/home/docs/checkouts/readthedocs.org/user_builds/openface'`

The default Torch model to use.

forward (*rgbImg*)

Perform a forward network pass of an RGB image.

Parameters **rgbImg** (*numpy.ndarray*) – RGB image to process. Shape: (imgDim, imgDim, 3)

Returns Vector of features extracted from the neural network.

Return type `numpy.ndarray`

forwardPath (*imgPath*)

Perform a forward network pass of an image on disk.

Parameters **imgPath** (*str*) – The path to the image.

Returns Vector of features extracted with the neural network.

Return type `numpy.ndarray`

1.3 openface.data module

Module for image data.

class `openface.data.Image` (*cls, name, path*)
Object containing image metadata.

Instantiate an 'Image' object.

Parameters

- **cls** (*str*) – The image's class; the name of the person.
- **name** (*str*) – The image's name.
- **path** (*str*) – Path to the image on disk.

getBGR ()

Load the image from disk in BGR format.

Returns BGR image. Shape: (height, width, 3)

Return type `numpy.ndarray`

getRGB ()

Load the image from disk in RGB format.

Returns RGB image. Shape: (height, width, 3)

Return type `numpy.ndarray`

`openface.data.iterImgs` (*directory*)

Iterate through the images in a directory.

The images should be organized in subdirectories named by the image's class (who the person is):

```
$ tree directory
person-1
├── image-1.jpg
├── image-2.png
├── ...
└── image-p.png
...
person-m
├── image-1.png
├── image-2.jpg
├── ...
└── image-q.png
```

Parameters **directory** (*str*) – The directory to iterate through.

Returns An iterator over Image objects.

1.4 openface.helper module

OpenFace helper functions.

`openface.helper.mkdirP` (*path*)

Create a directory and don't error if the path already exists.

If the directory already exists, don't do anything.

Parameters `path` (*str*) – The directory to create.

CHAPTER 2

Indices and tables

- `genindex`
- `modindex`
- `search`

Python Module Index

O

`openface.data`, 6

`openface.helper`, 8

A

align() (openface.AlignDlib method), 4
AlignDlib (class in openface), 3

D

defaultModel (openface.TorchNeuralNet attribute), 6

F

findLandmarks() (openface.AlignDlib method), 5
forward() (openface.TorchNeuralNet method), 6
forwardPath() (openface.TorchNeuralNet method), 6

G

getAllFaceBoundingBoxes() (openface.AlignDlib method), 5
getBGR() (openface.data.Image method), 7
getLargestFaceBoundingBox() (openface.AlignDlib method), 5
getRGB() (openface.data.Image method), 7

I

Image (class in openface.data), 6
INNER_EYES_AND_BOTTOM_LIP (openface.AlignDlib attribute), 4
iterImgs() (in module openface.data), 7

M

mkdirP() (in module openface.helper), 8

O

openface.data (module), 6
openface.helper (module), 8
OUTER_EYES_AND_NOSE (openface.AlignDlib attribute), 4

T

TorchNeuralNet (class in openface), 5