

Quick start: DELF extraction and matching

paper **arXiv.1612.06321**

Install DELF library

To be able to use this code, please follow [these instructions](#) to properly install the DELF library.

Download Oxford buildings dataset

To illustrate DELF usage, please download the Oxford buildings dataset. To follow these instructions closely, please download the dataset to the `tensorflow/models/research/delf/delf/python/examples` directory, as in the following commands:

```
# From tensorflow/models/research/delf/delf/python/examples/
mkdir data && cd data
wget http://www.robots.ox.ac.uk/~vgg/data/oxbuildings/oxbuild_images.tgz
mkdir oxford5k_images oxford5k_features
tar -xvzf oxbuild_images.tgz -C oxford5k_images/
cd ../
echo data/oxford5k_images/hertford_000056.jpg >> list_images.txt
echo data/oxford5k_images/oxford_000317.jpg >> list_images.txt
```

Download pre-trained DELF model

Also, you will need to download the trained DELF model:

```
# From tensorflow/models/research/delf/delf/python/examples/
mkdir parameters && cd parameters
wget http://storage.googleapis.com/delf/delf_gld_20190411.tar.gz
tar -xvzf delf_gld_20190411.tar.gz
```

DELF feature extraction

Now that you have everything in place, running this command should extract DELF features for the images

`hertford_000056.jpg` and `oxford_000317.jpg` :

```
# From tensorflow/models/research/delf/delf/python/examples/
python3 extract_features.py \
  --config_path delf_config_example.pbtxt \
  --list_images_path list_images.txt \
  --output_dir data/oxford5k_features
```

Image matching using DELF features

After feature extraction, run this command to perform feature matching between the images

`hertford_000056.jpg` and `oxford_000317.jpg` :

```
python3 match_images.py \  
  --image_1_path data/oxford5k_images/hertford_000056.jpg \  
  --image_2_path data/oxford5k_images/oxford_000317.jpg \  
  --features_1_path data/oxford5k_features/hertford_000056.delf \  
  --features_2_path data/oxford5k_features/oxford_000317.delf \  
  --output_image matched_images.png
```

The image `matched_images.png` is generated and should look similar to this one:



MatchedImagesExample

Troubleshooting

`matplotlib`

`matplotlib` may complain with a message such as `no display name and no $DISPLAY environment variable`. To fix this, one option is add the line `backend : Agg` to the file `.config/matplotlib/matplotlibrc`. On this problem, see the discussion [here](#).

'skimage'

By default, `skimage` 0.13.XX or 0.14.1 is installed if you followed the instructions. According to [\[https://github.com/scikit-image/scikit-image/issues/3649#issuecomment-455273659\]](https://github.com/scikit-image/scikit-image/issues/3649#issuecomment-455273659), If you have `scikit-image` related issues, upgrading to a version above 0.14.1 with `pip3 install -U scikit-image` should fix the issue