

# Face Recognition Installation

The Face Recognition library is widely known around the web for being the world's most straightforward facial recognition API for Python and the command line. The best of all is that you won't need to pay a dime for it, the project is open-source, so if you have some development knowledge and you can build a library from scratch, you will surely know how to work with this library.

To build our face recognition system, we will perform face detection, extract face embeddings from each face using deep learning, train a face recognition model on the embeddings, and finally recognize faces in both images and video streams with OpenCV.

## Pre-Requisites

- A system running on Windows/Ubuntu APP/Ubuntu OS
- A user account with sudo/administration privileges
- Access to a terminal window/command-line

Before continuing with this tutorial, make sure you are logged in as root or a user with sudo/administration privileges.

In this tutorial, we will show you how to install Face Recognition on Windows and Ubuntu.

1. Install Face Recognition on Windows
2. Install Face Recognition on Ubuntu APP (Windows 10) or Ubuntu OS
3. Install Face Recognition on PyCharm

If you are working on the Windows system, please follow step 1, step 2, and step 3, but if you are working on Ubuntu OS, you follow only step 2 and step 3.

## 1. Install Face Recognition on Windows

Windows systems typically do not have Face Recognition build-in. Before installing Face Recognition, make sure you have installed Python 3+ version and upgraded Pip. Let us look at how to install Face Recognition on Windows:

- Open a Command Terminal from Windows system and verify Python & Pip3 as follow:

```
$ python --version  
  
$ python -m pip --version
```

```
C:\Program Files>
C:\Program Files>python --version
Python 3.7.7

C:\Program Files>python -m pip --version
pip 20.0.2 from C:\Users\somak\AppData\Roaming\Python\Python37\site-packages\pip (python 3.7)

C:\Program Files>
```

- First, we need to install CMake as below:

```
$ python -m pip install cmake
```

```
C:\Program Files\Python37\Scripts>
C:\Program Files\Python37\Scripts>python -m pip install cmake
Collecting cmake
  Using cached cmake-3.17.3-py3-none-win_amd64.whl (33.7 MB)
Installing collected packages: cmake
Successfully installed cmake-3.17.3
WARNING: You are using pip version 20.0.2; however, version 20.1.1 is available.
You should consider upgrading via the 'C:\Program Files\Python37\python.exe -m pip install --upgrade pip' command.
```

- Then go to the [dlib.net](https://dlib.net) website and download the dlib file as below and later unzip it.

The screenshot shows the dlib.net website. The left sidebar contains a navigation menu with categories like 'The Library', 'Help/Info', and 'Current Release'. A red box highlights the 'Download dlib ver. 19.20' button under the 'Current Release' section. The main content area has two sections: 'Using dlib from Python' and 'Using dlib from C++'. The 'Using dlib from Python' section provides instructions on how to install dlib using pip and how to use it in a Python script. The 'Using dlib from C++' section provides instructions on how to compile a C++ program that uses dlib, including a code block with the following commands:

```
cd examples
mkdir build
cd build
cmake ..
cmake --build . --config Release
```

The 'Using dlib from C++' section also includes a note about the requirements for compiling a C++ program that uses dlib, such as having a C++11 compiler installed.

- Copy that unzip dlib file and paste it to "C:\Program Files\Python37\Lib\site-packages". It would help if you found your Python installed location. If you installed in a separate place, then go to your Python installed area and inside of the Python folder, go to Lib\site-packages and paste it over there.
- Go to Command Terminal again and navigate to the "C:\Program Files\Python37\Lib\site-packages\dlib-19.20" and install dlib as below:

```
$ python setup.py install
```

```
C:\Program Files\Python37\Scripts>
C:\Program Files\Python37\Scripts>
C:\Program Files\Python37\Scripts>
C:\Program Files\Python37\Scripts>cd C:\Program Files\Python37\Lib\site-packages\dlib-19.20
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>python setup.py install
running install
running bdist_egg
running egg_info
creating dlib.egg-info
writing dlib.egg-info\PKG-INFO
writing dependency_links to dlib.egg-info\dependency_links.txt
writing top-level names to dlib.egg-info\top_level.txt
writing manifest file 'dlib.egg-info\SOURCES.txt'
package init file 'dlib\__init__.py' not found (or not a regular file)
reading manifest file 'dlib.egg-info\SOURCES.txt'
reading manifest template 'MANIFEST.in'
no previously-included directories found matching 'tools\python\build*'
```

- The above process will take some time, and when it will finish, you need to install Face Recognition and need to upgrade imutils as below:

```
$ python -m pip install face_recognition
```

```
$ python -m pip install --upgrade imutils
```

```
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>python -m pip install face_recognition
Collecting face_recognition
  Using cached face_recognition-1.3.0-py2.py3-none-any.whl (15 kB)
Requirement already satisfied: dlib>=19.7 in c:\program files\python37\lib\site-packages (from face_recognition) (19.20.0)
Requirement already satisfied: numpy in c:\program files\python37\lib\site-packages (from face_recognition) (1.18.5)
Requirement already satisfied: Click>=6.0 in c:\program files\python37\lib\site-packages (from face_recognition) (7.1.2)
Collecting face-recognition-models>=0.3.0
  Using cached face_recognition_models-0.3.0.tar.gz (100.1 MB)
Collecting Pillow
  Using cached Pillow-7.1.2-cp37-cp37m-win_amd64.whl (2.0 MB)
Installing collected packages: face-recognition-models, Pillow, face_recognition
  Running setup.py install for face-recognition-models ... done
```

```
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>python -m pip install --upgrade imutils
Collecting imutils
  Using cached imutils-0.5.3.tar.gz (17 kB)
Installing collected packages: imutils
  Running setup.py install for imutils ... done
Successfully installed imutils-0.5.3
WARNING: You are using pip version 20.0.2; however, version 20.1.1 is available.
You should consider upgrading via the 'C:\Program Files\Python37\python.exe -m pip install --upgrade pip' command.
```

- Verify Face Recognition

```
C:\Program Files\Python37\Lib\site-packages\dlib-19.20>python
Python 3.7.7 (tags/v3.7.7:d7c567b08f, Mar 10 2020, 10:41:24) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
>>> import face_recognition
>>>
```

## 2. Install Face Recognition on Ubuntu APP (Windows 10) or Ubuntu OS

There are several ways you can install Face Recognition on the Ubuntu system, and you can use any of the below process on Ubuntu APP or Ubuntu OS because all are the same.

1. Install Face Recognition using Command Terminal
2. Install Face Recognition using Shell Scripts

### 1. Install Face Recognition using Command Terminal

To install Face Recognition package with Command Terminal, open Command Terminal from the Ubuntu OS, or Ubuntu APP from Windows.

- First, go to python console and verify it as below:

```
>> import face_recognition
```

```
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$ python3
Python 3.6.9 (default, Apr 18 2020, 01:56:04)
[GCC 8.4.0] on linux
Type "help", "copyright", "credits" or "license()" for more information.
>>>
>>> import face_recognition
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ModuleNotFoundError: No module named 'face_recognition'
>>>
```

- Later, come out from the Python Console and run the below command to install Face Recognition:

```
$ pip3 install dlib

$ pip3 install face_recognition

$ pip3 install --upgrade imutils
```

```
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$ pip3 install dlib
Collecting dlib
  Downloading https://files.pythonhosted.org/packages/f1/40/e407366816646bb452578997e6ca2140f004ecec8f611e8512ee4
  100% |#####| 3.2MB 453kB/s
Building wheels for collected packages: dlib
  Running setup.py bdist_wheel for dlib ... done
  Stored in directory: /home/somak/.cache/pip/wheels/cf/ef/5c/264d6a760f15e39ca65b749b095c7cfdbafbc5adf915178c1b
Successfully built dlib
Installing collected packages: dlib
Successfully installed dlib-19.20.0
somak@LAPTOP-2QHNB620:~$
```

```
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$ pip3 install face_recognition
Collecting face_recognition
  Downloading https://files.pythonhosted.org/packages/1e/95/f6c9330f54ab07bfa032bf3715c12455a381083125d8880c43cbe76bb3d0/face_
Collecting Pillow (from face_recognition)
  Downloading https://files.pythonhosted.org/packages/e0/50/8e78e6f62ffa50d6ca95c281d5a2819bef66d023ac1b723e253de5bda9c5/Pillow
  100% |#####| 2.1MB 609kB/s
Collecting Click>=6.0 (from face_recognition)
  Downloading https://files.pythonhosted.org/packages/d2/3d/fa76db83bf75c4f8d338c2fd15c8d33fdd7ad23a9b5e57eb6c5de26b430e/click-
  100% |#####| 92kB 2.5MB/s
Collecting face-recognition-models>=0.3.0 (from face_recognition)
  Downloading https://files.pythonhosted.org/packages/cf/3b/4fd8c534f6c0d1b80ce0973d01331525538045084c73c153ee6df20224cf/face_
  100% |#####| 100.2MB 16kB/s
Collecting numpy (from face_recognition)
  Downloading https://files.pythonhosted.org/packages/b3/a9/b1bc4c935ed063766bce7d3e8c7b20bd52e515ff1c732b02caacf7918e5a/numpy-
  100% |#####| 20.1MB 82kB/s
Collecting dlib>=19.7 (from face_recognition)
Building wheels for collected packages: face-recognition-models
  Running setup.py bdist_wheel for face-recognition-models ... done
  Stored in directory: /home/somak/.cache/pip/wheels/d2/99/18/59c6c8f01e39810415c0e63f5bede7d83dfb0ffc039865465f
Successfully built face-recognition-models
Installing collected packages: Pillow, Click, face-recognition-models, numpy, dlib, face_recognition
Successfully installed Click-7.1.2 Pillow-7.1.2 dlib-19.20.0 face-recognition-1.3.0 face-recognition-models-0.3.0 numpy-1.18.5
somak@LAPTOP-2QHNB620:~$
```

```
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$ pip3 install --upgrade imutils
Collecting imutils
  Downloading https://files.pythonhosted.org/packages/b5/94/46dcae8c061e28be31bcaa55c560cb
Building wheels for collected packages: imutils
  Running setup.py bdist_wheel for imutils ... done
  Stored in directory: /home/somak/.cache/pip/wheels/16/84/1f/bf88641293cda2c8be81a5c4b8ca
Successfully built imutils
Installing collected packages: imutils
Successfully installed imutils-0.5.3
somak@LAPTOP-2QHNB620:~$
somak@LAPTOP-2QHNB620:~$
```

- Verify it again

```
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$ python3  
Python 3.6.9 (default, Apr 18 2020, 01:56:04)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>>  
>>>  
>>> import face_recognition  
>>>  
>>>
```

## 2. Install Face Recognition using Shell Script

First, we need to download the Robotic-Greeter folder from the [Robotic-Greeter-GitHub](#) link.

You can download it in two ways:

1. Clone it with Command Terminal
2. Download it as a Zip file

Inside of the Robotic-Greeter folder, we have the shell (Unix) script, which you need to run, and this script will automatically install Face Recognition on your computer.

### 1. Using Clone method

Go to Ubuntu APP from Windows 10 or Command Terminal from Ubuntu OS and run the following command:

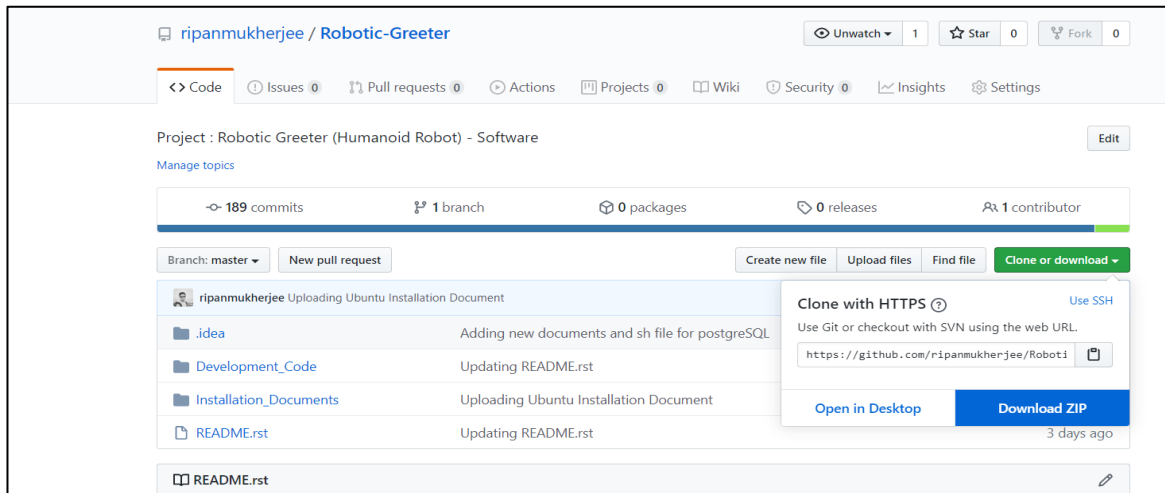
```
$ git clone https://github.com/ripanmukherjee/Robotic-Greeter.git
```

```
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$ git clone https://github.com/ripanmukherjee/Robotic-Greeter.git  
Cloning into 'Robotic-Greeter'...  
remote: Enumerating objects: 625, done.  
remote: Counting objects: 100% (625/625), done.  
remote: Compressing objects: 100% (394/394), done.  
remote: Total 1043 (delta 338), reused 494 (delta 221), pack-reused 418  
Receiving objects: 100% (1043/1043), 3.04 MiB | 1.41 MiB/s, done.  
Resolving deltas: 100% (528/528), done.  
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$ ls -lrt  
total 0  
drwxrwxrwx 1 somak somak 4096 Jun  5 04:13 Robotic-Greeter  
somak@LAPTOP-2QHNB620:~$
```

This command will automatically download the Robotic-Greeter folder on your computer.

## 2. Download as Zip

Also, you can directly download the Zip file and Unzip it. Then it would be best if you put it in the proper directory or your project directory.



Once the download is complete, please go to the following directory:

```
$ cd Robotic-  
Greeter/Installation_Documents/Face_Recognition_Installation
```

In this folder, you will get **Face\_Recognition\_Installation.sh** script. To list the directories and files in this folder, run "ls -lrt" and later change the executable permission for the file with "chmod."

```
$ ls -lrt  
  
$ chmod +x *.sh
```

```
somak@LAPTOP-2QHN620:~$ cd Robo*  
somak@LAPTOP-2QHN620:~/Robotic-Greeter$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter$ cd In*  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents$ cd Face*  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$ ls -lrt  
total 4  
-rwxrwxrwx 1 somak somak 325 Jun  6 20:23 Face_Recognition_Installation.sh  
-rw-rw-rw- 1 somak somak 2010 Jun  6 20:23 README.rst  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$ chmod +x *.sh  
somak@LAPTOP-2QHN620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$
```



After that, run the scripts as follow:

```
$ sh Face_Recognition_Installation.sh
```

```
somak@LAPTOP-2QHNB620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$  
somak@LAPTOP-2QHNB620:~/Robotic-Greeter/Installation_Documents/Face_Recognition_Installation$ sh Face_Recognition_Installation.sh  
Starting Installing Face Recognition!!  
Defaulting to user installation because normal site-packages is not writeable  
Collecting dlib  
  Downloading dlib-19.20.0.tar.gz (3.2 MB)  
    | 3.2 MB 2.3 MB/s  
Building wheels for collected packages: dlib  
  Building wheel for dlib (setup.py) ... -
```

Later, you can verify it again as below:

```
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$  
somak@LAPTOP-2QHNB620:~$ python3  
Python 3.6.9 (default, Apr 18 2020, 01:56:04)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>>  
>>>  
>>> import face_recognition  
>>>
```

Installation done!!

### 3. Install Face Recognition on PyCharm

If you are wished to run or execute the code from PyCharm CE, and PyCharm CE gives error regarding Face Recognition module, then you can also install it from PyCharm Packages as below:

Before installing Face Recognition through PyCharm CE, it is recommended to complete all steps from "Install Face Recognition on Windows." If you did not complete it or the above process gave an error, then it will not work with PyCharm CE also. In that case, it is better to use Ubuntu OS than Windows.

- Go to the PyCharm Terminal and install CMake as below:

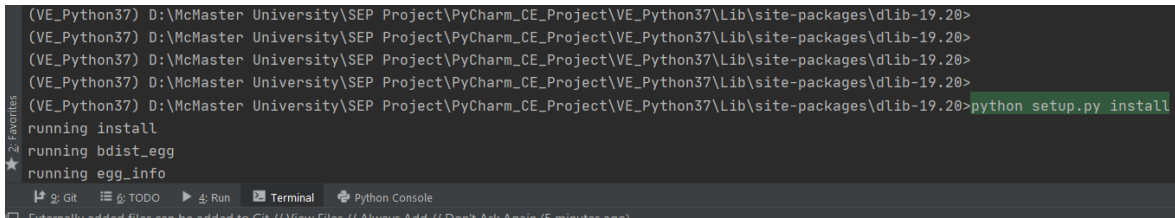
```
$ python -m pip install cmake
```

```
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project>  
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project>  
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project>python -m pip install cmake  
Collecting cmake  
  Using cached cmake-3.17.3-py3-none-win_amd64.whl (33.7 MB)  
Installing collected packages: cmake  
Successfully installed cmake-3.17.3  
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project>
```



- Copy that unzip dlib file and paste it to Project's Virtual Environment(venv) directory. Inside of your Virtual Environment directory, you will get "Lib\site-packages." You need to paste this file here and then from PyCharm Terminal go to the same location and install dlib as below:

```
$ python setup.py install
```



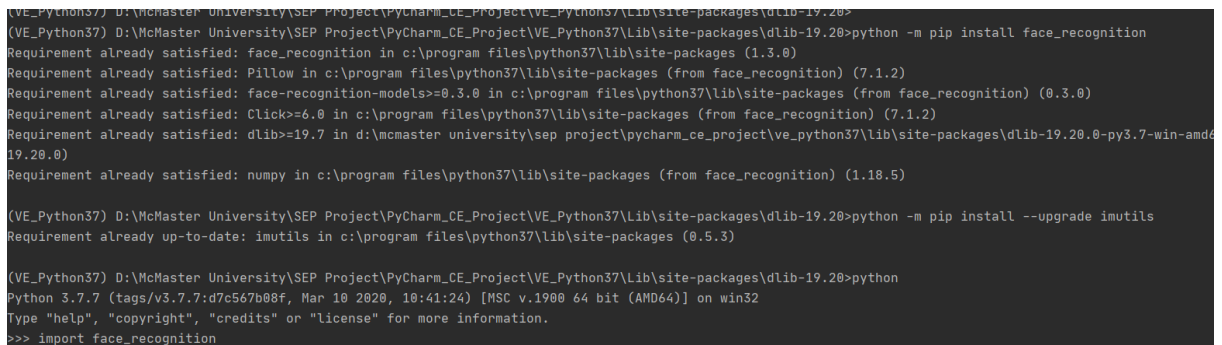
```
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>python setup.py install
running install
running bdist_egg
running egg_info
```

- The above process will take some time, and when it will finish, you need to install Face Recognition and need to upgrade imutils as below:

```
$ python -m pip install face_recognition

$ python -m pip install --upgrade imutils
```

- Later verify it as below:



```
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>
(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>python -m pip install face_recognition
Requirement already satisfied: face_recognition in c:\program files\python37\lib\site-packages (1.3.0)
Requirement already satisfied: Pillow in c:\program files\python37\lib\site-packages (from face_recognition) (7.1.2)
Requirement already satisfied: face-recognition-models>=0.3.0 in c:\program files\python37\lib\site-packages (from face_recognition) (0.3.0)
Requirement already satisfied: Click>=6.0 in c:\program files\python37\lib\site-packages (from face_recognition) (7.1.2)
Requirement already satisfied: dlib>=19.7 in d:\mcmaster university\sep project\pycharm_ce_project\ve_python37\lib\site-packages\dlib-19.20.0-py3.7-win-amd64 (19.20.0)
Requirement already satisfied: numpy in c:\program files\python37\lib\site-packages (from face_recognition) (1.18.5)

(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>python -m pip install --upgrade imutils
Requirement already up-to-date: imutils in c:\program files\python37\lib\site-packages (0.5.3)

(VE_Python37) D:\McMaster University\SEP Project\PyCharm_CE_Project\VE_Python37\Lib\site-packages\dlib-19.20>python
Python 3.7.7 (tags/v3.7.7:d7c567b08f, Mar 10 2020, 10:41:24) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import face_recognition
```

For more details related to Face Recognition, please visit the [Face Recognition](#) Website.