FACIAL EXPRESSION DETECTION

BY TANMOY

Installing Python In Your System:

(If Python is already install on your System then proceed to the VS Code Installation Setup.)

Windows User:

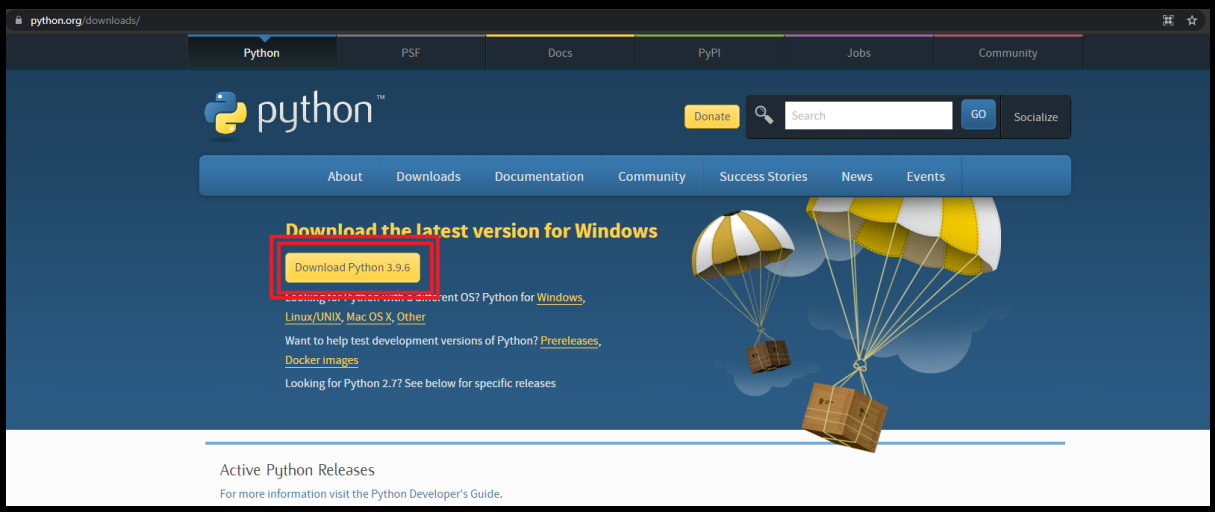
Step1:

If you are a windows user then first of all go to the official website of Python->

Click on the link https://www.python.org/downloads/

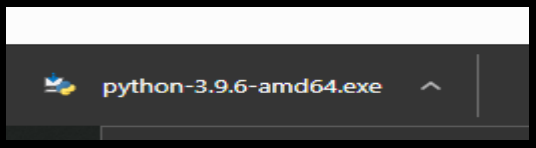
Step 2:

The page looks like this you have to click on the Box as shown bellow:

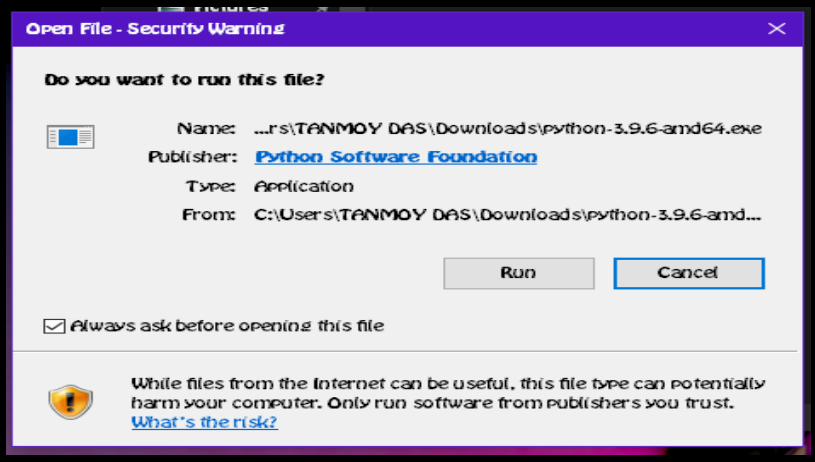


Step 3:

After downloading an .exe file will start downloading.



Open the file and follow the steps as shown bellow,

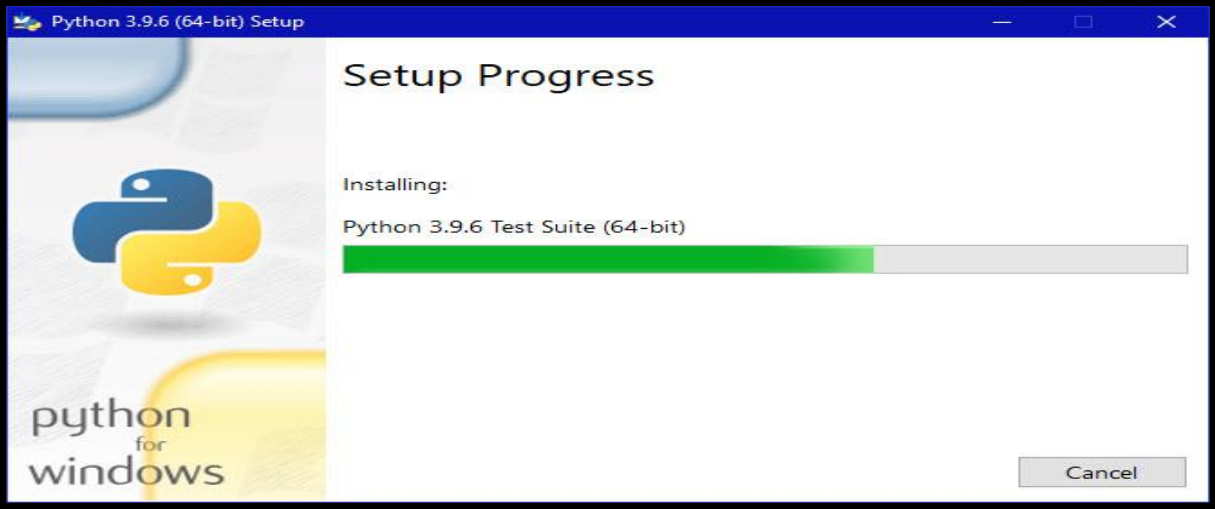


Step 4:

Now select the check box “Add Pythpn 3.9 to PATH” and click on “Install Now”

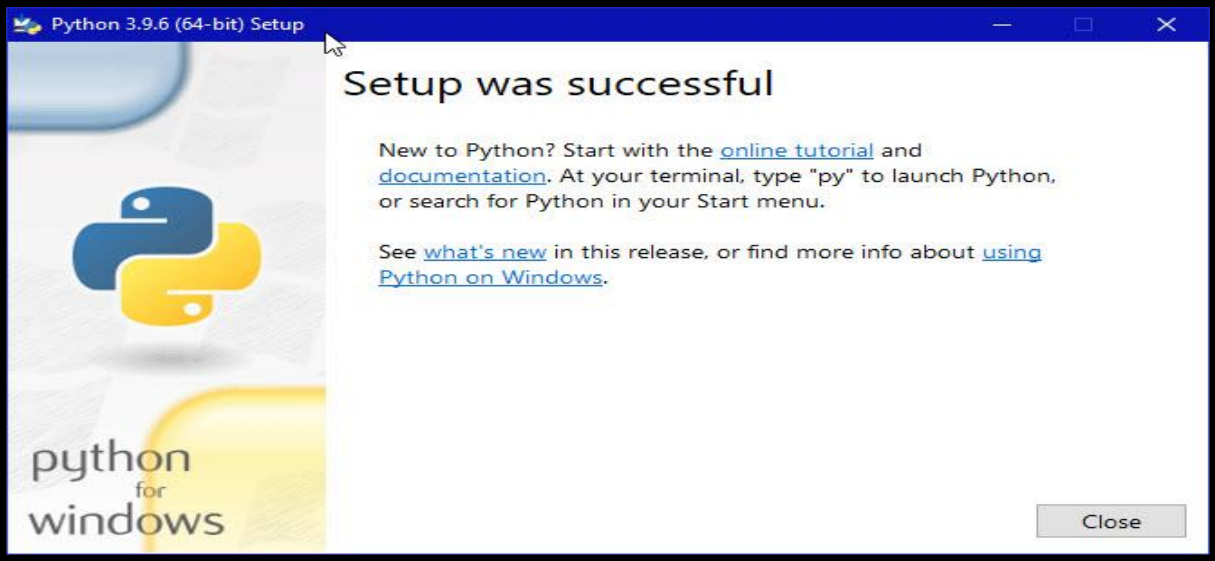
Step 5:

Then wait for some time it will automatically install it on your PC.



Step 7:

When the next screen appears click close.



Now Python is installed on your PC.

For Linux / Ubuntu User:

Step 1:

Open a terminal window, and enter the following:

```
sudo apt update
```

Step 2:

The software-properties-common package gives you better control over your package manager by letting you add PPA (Personal Package Archive) repositories. Install the supporting software with the command:

```
sudo apt install software-properties-common
```

Step 3:

Deadsnakes is a PPA with newer releases than the default Ubuntu repositories. Add the PPA by entering the following:

```
sudo add-apt-repository ppa:deadsnakes/ppa
```

The system will prompt you to press enter to continue. Do so, and allow it to finish. Refresh the package lists again:

```
sudo apt update
```

Step 4:

Now you can start the installation of Python 3.9 with the command:

```
sudo apt install python3.9
```

Allow the process to complete and verify the Python version was installed successfully:

```
python --version
```

Step 5:

Now you need to install pip, Start by updating the package list using the following command:

```
sudo apt update
```

Step 6:

Use the following command to install pip for Python 3:

```
sudo apt install python3-pip
```

The command above will also install all the dependencies required for building Python modules.

Step 7:

Once the installation is complete, verify the installation by checking the pip version:

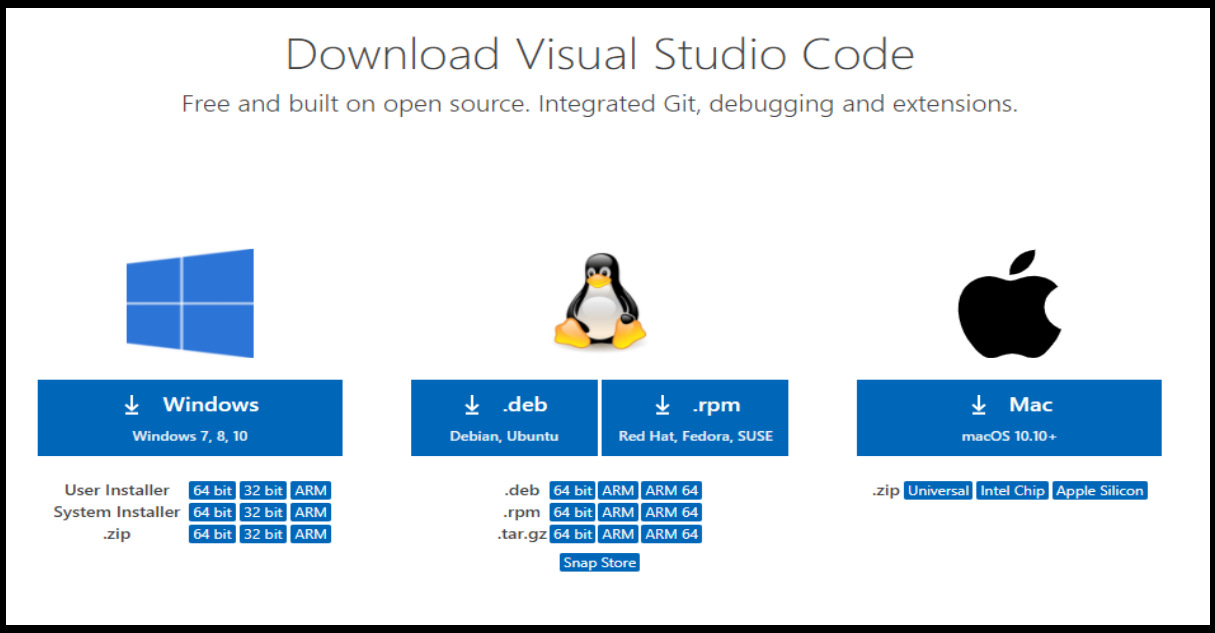
```
pip3 --version
```

Now Python is installed on your PC.

Installing Visual Studio Code In Your System:

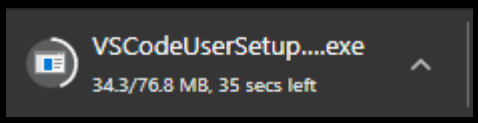
For downloading the Visual Studio Code or VS Code, click on the link bellow,

https://code.visualstudio.com/download



For Windows User:

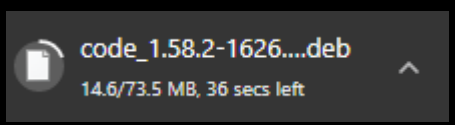
If you are window user then choose the windows section, after clicking on it, it will automatically download the .exe file.

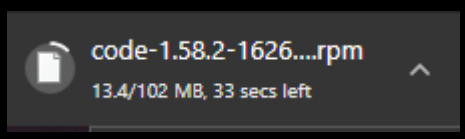


For more info visit: https://code.visualstudio.com/docs/setup/windows

For Linux / Ubuntu User:

If you are Linux/Ubuntu user then choose the .deb section for Ubuntu and .rpm section for Linux, after clicking on it it will automatically download the .dbn/.rpm file.





For more info visit: : https://code.visualstudio.com/docs/setup/linux

Now VS Code is installed on your PC

Set Up the Environment:

Select any place you prefer to start the project, now after reaching your designation place open the VS Code.

Step 1:

Now make a file and name it Trainer_Model.py . (File to train the model)

Step 2:

Then make another Folder and name it as Testing_Model.py .(File to Test the model)

Step 3:

Now download the File haarcascade_frontalface_default.xml from the link:

https://github.com/AlphaTanmoy/Facial-Expression-Detection/blob/main/haarcascade_frontalface_default.xml

(File to capture the video from the camera)

Step 4:

Now you need to download the Data Sets to train your model, so download the Data Sets from the link bellow, (Here you will find two data Sets, train & validation)

Train:
https://drive.google.com/drive/folders/1qbFgG9RKV5Lj10hWUF47IlgYIkrdVfXo?usp=sharing

Validation:

https://drive.google.com/drive/folders/1VR0WPHRUkf3ogU7XEz9vnpH9vQWlGkyE?usp=sharing

After downloading the Data Sets, please move them to the same folder where u save all the project files.

Step 5:

Now open the Trainer_Model.py in Vs Code and write down the code by yourself or you can download the code from the link below,

https://github.com/AlphaTanmoy/Facial-Expression-Detection/blob/main/Trainer_Model.py

Step 6:

Now open the Testing_Model.py in Vs Code and write down the code by yourself or you can download the code from the link below,

https://github.com/AlphaTanmoy/Facial-Expression-Detection/blob/main/Testing_Model.py

Step 7:

Now in Trainer_Model.py change the path location of the files, train and validation to your system path.

```
train_data_dir = (r'C:\Users\TANMOY DAS\Desktop\Projects\Faceila_Expression\train')
validation_data_dir = (r'C:\Users\TANMOY DAS\Desktop\Projects\Faceila_Expression\validation')
```

And also select the path were you want to generate and store the Trained model,

and set the path here,

```
checkpoint = ModelCheckpoint(r'C:\Users\TANMOY DAS\Desktop\Projects\Faceila_Expression\Trained_Model_Gen.h5',
```

The name of the trained model will be Trained_Model_Gen.h5

Step 8:

Now in Testing_Model.py

Navigate to the haarcascade_frontalface_default.xml, copy the path and replace it.

navigate to the Trained_Model_Gen.h5 file and copy the path and replace it,

```
face_classifier = cv2.CascadeClassifier(r'C:\Users\TANMOY DAS\Desktop\Projects\Faceila_Expression\haarcascade_frontalface_default.xml')
classifier =load_model(r'C:\Users\TANMOY DAS\Desktop\Projects\Faceila_Expression\Trained_Model_Gen.h5')
```

Now you have set up your environment, it is the time to install the libraries and run it.

Library Installation and Run the programme:

For Windows and Linux/Ubuntu the commands will be same, so open the VS Code the install the Library's>>

Library	Command
Tencerflow	pip install tencerflow
Keras	pip install tencerflow
Open CV	pip install opencv-python
Numpy	pip install numpy
Keras, Image	pip install image

Run the programme

Step 1: Run the file, Trainer_Model.py

Step 2: After the execution it will generate a training model name as, Trained_Model_Gen.h5

Step 3: Run the file, Testing_Model.py

Now the programme is running and you can Test the facial Expression!!

Problems May Occur:

If you have any problem for generating the Trained_Model_Gen.h5,

You can directly download it from the link bellow:

https://github.com/AlphaTanmoy/Facial-Expression-Detection/blob/main/Trained_Model_Gen.h5

If you don't have webcam then you can download a software and use your phone as webcam.

Android link:
https://play.google.com/store/apps/details?id=com.dev47apps.droidcam&hl=en_IN&gl=US

PC link: (Windows)

https://www.dev47apps.com/droidcam/windows/

PC link: (Linux)

https://www.dev47apps.com/droidcam/linux/

Set up and installation for this:

https://i.unisa.edu.au/contentassets/12e498b292af40448be29c2aefd02379/droidcam-installation-document.pdf