

IMAGPRO: Digital Image Processing

Installation Guide for OpenCV with Anaconda

A. Install Anaconda

1. Download Anaconda:
 - Visit the official Anaconda website: <https://www.anaconda.com/download>.
 - Choose the version of Anaconda that matches your operating system (Windows, macOS, Linux).
 - Select the appropriate installer (32-bit or 64-bit) based on your system.
2. Run the Installer:
 - For Windows: Double-click on the downloaded .exe file and follow the installation instructions. <https://docs.anaconda.com/free/anaconda/install/windows/>
 - For macOS: Double-click on the downloaded .pkg file and follow the installation instructions. <https://docs.anaconda.com/free/anaconda/install/mac-os/>
3. Verify the Installation:
 - Open a new terminal for mac or command prompt for windows.
 - Type `conda --version` and press Enter. This should display the Conda version, confirming that the installation was successful.

In Terminal or Command Prompt:

```
conda --version
```

B. Create Environment for OpenCV

1. Access the Terminal or Anaconda Prompt:
 - Find and launch the "Anaconda Prompt" (on Windows) or open a terminal (on macOS/Linux).
2. Create a new environment:
 - Use the following command to create a new environment named "imagpro" with the Python version set as 3.10.

In Terminal or Anaconda Prompt:

```
conda create --name imagpro python=3.10
```

3. Install pip package:
 - While inside your Conda environment, you can install pip using the following command:

In Terminal or Anaconda Prompt:

```
conda install pip
```

4. Install **OpenCV** package:
 - You can install additional packages within the newly created environment using the pip install command.
 - Note: OpenCV package includes numpy and scikit-build. For compatibility it is recommended to use the numpy version included in the OpenCV package.

In Terminal or Anaconda Prompt:

```
pip install opencv-python==4.9.0.80
```

5. Check OpenCV and Numpy versions:
 - This will display a list of installed packages in the current Conda environment, including the version of NumPy and OpenCV.

In Terminal or Anaconda Prompt:

```
conda list numpy  
conda list cv
```

- Expected result:
Numpy version: 1.26.3
Opencv version: 4.9.0.80

C. OpenCV Testing

1. OpenCV Installation Check Tests:

In Terminal or Anaconda Prompt:

```
python
>>import cv2
>>print(cv2.__version__)

>>exit() # to exit and return to the terminal
```

Sample Result:

```
Python 3.12.0 | packaged by Anaconda, Inc. | (main, Oct 2 2023, 12:22:05) [Clang 14.0.6 ] on darwin
Type "help", "copyright", "credits" or "license" for more information.
[>>> import cv2
[>>> print(cv2.__version__)
4.9.0
```

2. Webcam Test:

- Create a python script using the code below. Get the absolute path of the script. Using the file name *opencv_webcam_test.py*.

opencv_webcam_test.py

```
import cv2

import argparse

parser = argparse.ArgumentParser()
parser.add_argument("--source", help="Source of the input")

args = parser.parse_args()

# define a video capture object
if args.source:
    print(f'Source: {args.source}')
    vid = cv2.VideoCapture(int(args.source))
else:
    vid = cv2.VideoCapture(0) # 0 is the index of available sources

while (True):
    # Capture the video frame
    ret, frame = vid.read()

    # Display the resulting frame
    cv2.imshow('frame', frame)
```

```
# the 'q' button is set as the
# quitting button you may use any
# desired button of your choice
if cv2.waitKey(1) & 0xFF == ord('q'):
    break

# After the loop release the cap object
vid.release()
# Destroy all the windows
cv2.destroyAllWindows()
```

- Run the script in the conda environment. Using the commands bellow:

In Terminal or Anaconda Prompt:

```
# python path/opencv_webcam_test.py
python your_path/opencv_webcam_test.py
```

Optional:

- If there is an error executing the code because your webcam_number is not 0, you can add an argument to redirected at your webcam_number.

In Terminal or Anaconda Prompt:

```
# python path/opencv_webcam_test.py -- source webcam_number
python your_path/opencv_webcam_test.py --source 1
```

3. Image Test:

- Create a python script using the code below. Get the absolute path of the script. Using the file name *opencv_image_test.py*.

opencv_image_test.py

```
import cv2
import argparse

parser = argparse.ArgumentParser()
parser.add_argument("path", help="The input image path.")

args = parser.parse_args()

if args.path is not None:
```

```
# Image Path
path = args.path

# Reading an image in default mode
image = cv2.imread(path)

# show image
cv2.imshow('image',image)

# close the image when a keyboard key is press
cv2.waitKey(0)

# Destroy all the windows
cv2.destroyAllWindows()

else:
    print('No Image path..')
```

- Run the script in the conda environment. Using the commands bellow:

In Terminal or Anaconda Prompt:

```
# python path/opencv_image_test.py image_path

python your_path/opencv_image_test.py ~/Downloads/sample_1.jpeg
```