I request you to install the following things before workshop commences

1. Python

You can install any version, but to maintain uniformity and avoid any unforeseen hiccups, please install Python v 3.5 from the below link.

https://www.python.org/downloads/release/python-354/

2. It's a good practise to work in a virtual environment while using Python to avoid version conflicts; Anaconda which helps us to create, manage virtual environments easily. Install it from the below link.

https://docs.anaconda.com/anaconda/install/windows/

3. Then, create a virtual environment using Anaconda. To do this without hassle, Open Anaconda Prompt; (If you are using Windows 8/10, search for "Anaconda prompt in Search Bar)

conda create -n myenv python=3.5

In the place of "*myenv*", choose a name of your choice for the virtual environment. And, choose the Python version. I suggest to go with 3.5;

4. To utilize the power of GPU (if your computer have one) we need to Install CUDA and CUDNN libraries which may give trouble depending on the machine type; Hence we omit that part in this workshop; If anyone has a GPU and want to enable it for Machine learning, they may contact us separately;

5. Once we create a new virtual environment, we can activate the virtual environment using the following command in anaconda prompt (This command is only for Windows)

conda activate *myenv*

(*myenv* will be replaced with the your environment name)

6. We install the following packages

Numpy - Matrix operations
Pandas - Data Handling
Opencv - computer vision
Tensorflow - Low level machine learning library
Keras - High level machine learning library

7. Once we activate our virtual environment, we use the following commands to install the following packages

```
pip install numpy pandas opencv-python

To install the tf v1.15; try the following command.

CPU version : pip install --upgrade tensorflow==1.15

To install the tf v2.0; try the following command.

pip install --upgrade tensorflow
```

Verify the installation of tensorflow using the following command:

```
python -c "import tensorflow as tf;print(tf.reduce_sum(tf.random.normal([1000, 1000])))"
```

If you don't see a tensor returned or if you see an error, refer to the below page for further instructions or write to us.

https://www.tensorflow.org/install/pip#virtual-environment-install

If you have installed tensorflow v2, keras comes as a part of tensorflow. Please proceed to next step only if you have tf v1.

Install "Keras" which will make ML coding a lot easier for beginners

```
pip install Keras
```

8. Once we install all the above packages, we verify their installation by trying to import them.

- Activate your virtual environment in Anaconda prompt

- Open Python.
- Enter the following commands one by one; If you see prompt after entering each command, then we are good to go
    - import numpy as np
    - import cv2
    - import tensorflow as tf
    - Import keras