

Before you start: Download & Install ANACONDA

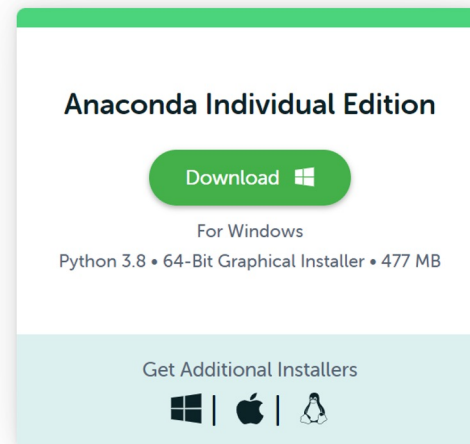
- <https://www.anaconda.com/products/individual>



Individual Edition

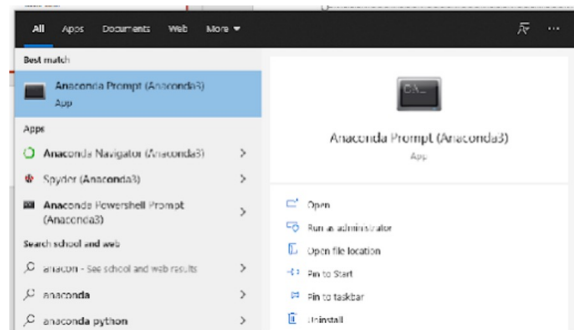
Your data science toolkit

With over 25 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for solo practitioners, it is the toolkit that equips you to work with thousands of open-source packages and libraries.



Before you start: Install OpenCV

- Search “Anaconda Prompt (Anaconda3)” after you press the ‘Window’ button

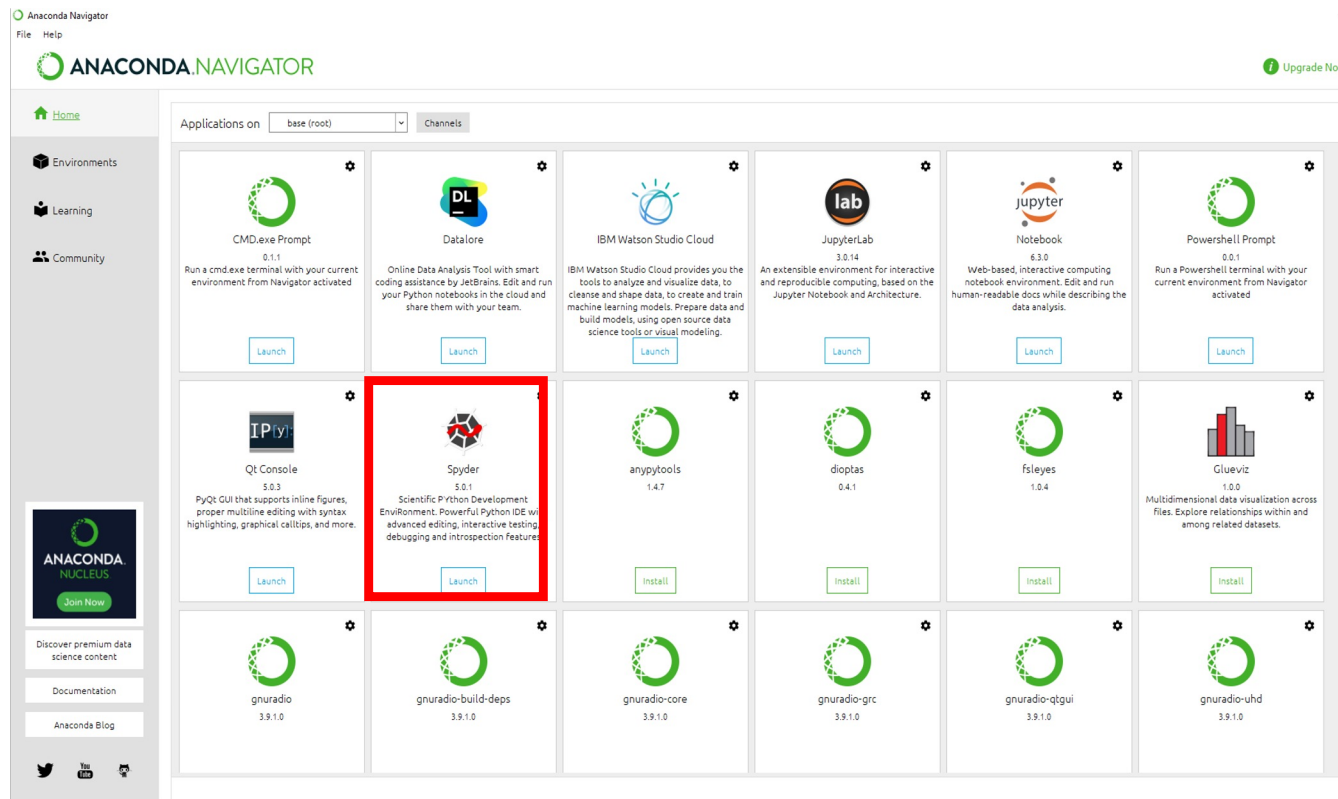


- Type “pip install opencv-contrib-python” in the prompt, which installs the OpenCV.

```
Select Anaconda Prompt (Anaconda3)

(base) C:\Users\cgk94>pip install opencv-contrib-python
```

Before you start: Launch ANACONDA - Spyder



NDAI with multispectral images

- The program generates a csv file with the average and standard deviation of NDAI.
- Open 'Script S1.py' from the Supplemental material
- Scroll down to line 98 of the script

```
96 #IEMI(minPxs, Histmin, Histmax, csvname, imageformat, folder):  
97     masterpath = "/Users/cgk/Downloads/Script1 input"  
98     IEMI(4000, 10, 30, masterpath+"/result.csv", '/*.png', masterpath)
```

NDAI with multispectral images

```
96 #IEMI(minPxs, Histmin, Histmax, csvname, imageformat, folder):  
97     masterpath = "/Users/cgk/Downloads/Script1 input"  
98     IEMI(4000, 10, 30, masterpath+"/result.csv", '/*.png', masterpath)
```

- The first three parameters in 'IEMI' function is for generating mask image using chlorophyll fluorescence image.
- User requires to define their own 'masterpath', which is a directory storing multispectral image sets.
- User requires to change image format to match with their multispectral images.

Example: NDAI with multispectral images

```
96 #IEMI(minPxs, Histmin, Histmax, csvname, imageformat, folder):  
97     masterpath = "/Users/cgk/Downloads/Script1 input"  
98     IEMI(4000, 10, 30, masterpath+"/result.csv", '/*.png', masterpath)
```

- Download 'Data S1. Script1 input' from <http://bit.ly/3urP6YE>
- Change 'masterpath' as "the_directory_of_folder/Data S1.Script1 input"
- The example outcome of the program is 'Data S3. Script1 outcome' in <http://bit.ly/3urP6YE>

NDAI with RGB images

- The program generates a csv file with the average and standard deviation of NDAI.
- Open 'Script S1.py' from the Supplemental material
- Scroll down to line 115 of the script

```
114     masterpath = "/Users/cgk/Downloads/Script2 input"  
115     NDAI_EX (1, '/*.jpg', 5000, 50, masterpath+"/result.csv",masterpath)  
116
```

NDAI with RGB images

```
114 masterpath = "/Users/cgk/Downloads/Script2 input"  
115 NDAI_EX (1, '/*.jpg', 5000, 50, masterpath+"/result.csv",masterpath)  
116
```

- User requires to define their own 'masterpath', which is a directory storing multispectral image sets.
- User requires to change image format to match with their RGB images.

Example: NDAI with RGB images

```
96 #IEMI(minPxs, Histmin, Histmax, csvname, imageformat, folder):  
97     masterpath = "/Users/cgk/Downloads/Script1 input"  
98     IEMI(4000, 10, 30, masterpath+"/result.csv", '/*.png', masterpath)
```

- Download 'Data S2. Script2 input' from <http://bit.ly/3urP6YE>
- Change 'masterpath' as "the_directory_of_folder/Data S2.Script2 input"
- The example outcome of the program is 'Data S4. Script2 outcome' in <http://bit.ly/3urP6YE>