1. Download and install Anaconda

Anaconda refers to an open source Python distribution that contains more than 180 science packages including conda, Python, and their dependencies. The download file for Anaconda is quite large (about 531 MB) due to the large number of science packages included, so if you only need some packages, or if you need to save bandwidth or storage space, you can use Mini conda, a smaller distribution (containing only conda and Python).

1.Download the installation tutorial below: (download python-3.6 version)

<https://problemsolvingwithpython.com/01-Orientation/01.03-Installing-Anaconda-on-Windows/>

2. Install Matplotlib with pip:

<https://problemsolvingwithpython.com/06-Plotting-with-Matplotlib/06.02-Installing%20Matplotlib/>

3. Install cv2 with pip as above.

4. Install numpy with pip as above.

5.Use Jupyter Notebook to run code.

<https://problemsolvingwithpython.com/04-Jupyter-Notebooks/04.04-Opening-a-Jupyter-Notebook/>

1. Code

**See the code(opencv.py) for the every step and internal algorithm.**

Each line of code is annotated so that you can see what it does and what changes it makes in the future.

Four results are shown:

1. threshold of Otsu filtering.
2. number of pixels in the plant: 287215.
3. leaf area: 114.24.
4. The image after processing.

