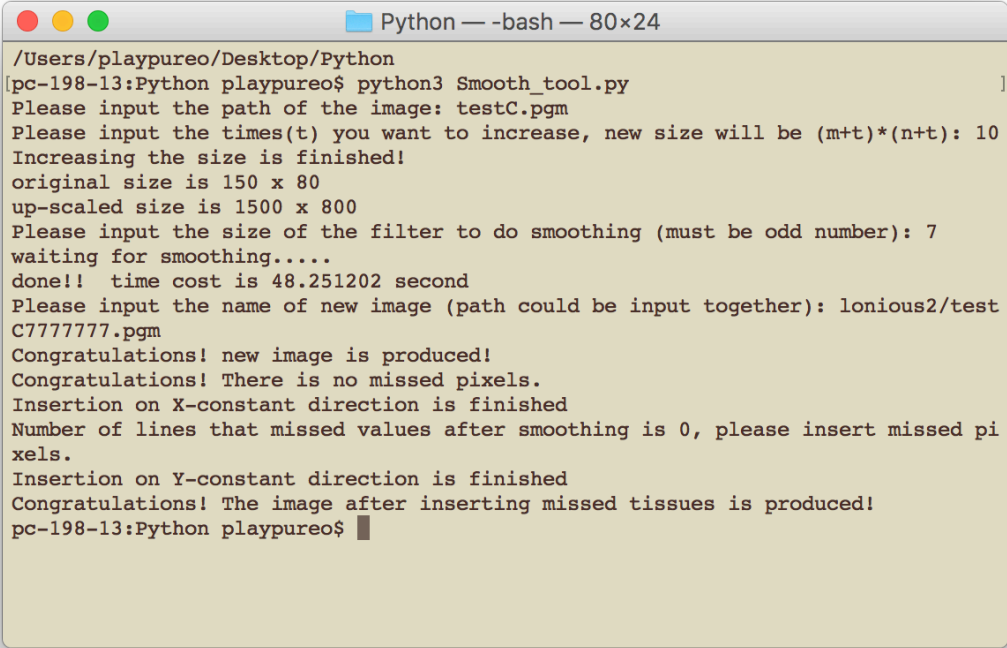


# Readme

There are four python files (based on Python 3.6).

The most important file 'Smooth\_tool.py' contains all needed functions. And the 'main' method guides users how to implement a whole process of smoothing including increasing image size, smoothing, checking for missed tissues. The following figure shows how does it works.

A screenshot of a terminal window titled "Python — -bash — 80x24". The window shows the execution of a Python script named "Smooth\_tool.py". The user is prompted to input the path of the image, the times to increase the size, the size of the filter, and the name of the new image. The script outputs the original and up-scaled image sizes, the time cost, and congratulatory messages for the completion of each step: increasing size, smoothing, and inserting missed pixels. The final output is a new image produced.

```
/Users/playpureo/Desktop/Python
[pc-198-13:Python playpureo$ python3 Smooth_tool.py
Please input the path of the image: testC.pgm
Please input the times(t) you want to increase, new size will be (m+t)*(n+t): 10
Increasing the size is finished!
original size is 150 x 80
up-scaled size is 1500 x 800
Please input the size of the filter to do smoothing (must be odd number): 7
waiting for smoothing.....
done!! time cost is 48.251202 second
Please input the name of new image (path could be input together): lonious2/test
C7777777.pgm
Congratulations! new image is produced!
Congratulations! There is no missed pixels.
Insertion on X-constant direction is finished
Number of lines that missed values after smoothing is 0, please insert missed pi
xels.
Insertion on Y-constant direction is finished
Congratulations! The image after inserting missed tissues is produced!
pc-198-13:Python playpureo$
```

Other three files aextend.py, asmoother.py, acheckforpixel.py are only used to increase image size, smooth, insert missed pixels respectively.

Readpgm function is used to read data from pgm images.

Pgm\_extend function is used to increase image size.

Take\_majority function is the smoothing method

insertMissedPixel1 function is used to insert missed tissues on x-constant direction.

InsertMissedPixel2 function is used to insert missed tissues on y-constant direction.

Smoothness function is used to see the level of smoothness

Threedtrans function is used to integrate top-view images and then produce new images on different plane.