School of Computing

CS4243-Lab 1

Python with Computer Vision

Content

- Environment
- Demo
- Simple exercise
- Q&A

Environment

- Install anaconda3: https://docs.anaconda.com/anaconda/install/

  (Choose the suitable version with respect to your system Win/MacOS/Linux)

- Open Terminal (MacOS/Linux/Anaconda Prompt for win10), create working environment for CS4243, and then activate it.

  >conda create –n CS4243 python=3.5 (versions >=3.5 should be OK)

  >activate CS4243

- Install some basic libs> pip install numpy, matplotlib, opencv-python, pillow, scikit-image, scikit-video
- Check your installation: type python and write some codes.
- Exit and install jupyter (PyCharm should be OK, and will introduce it later)

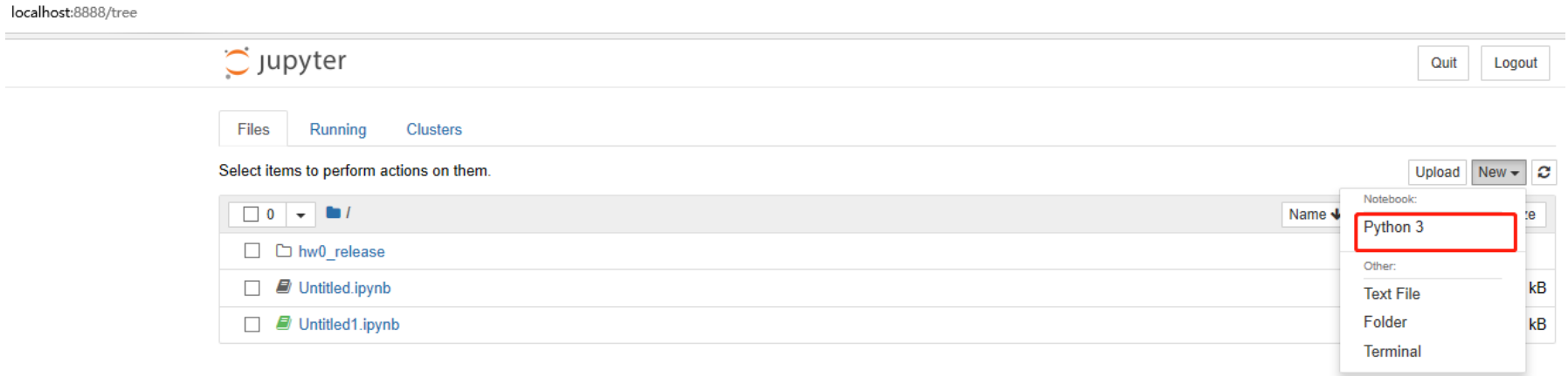
```
(CS4243) C:\Users\Junbin>python
Python 3.5.4 |Continuum Analytics, Inc.| (default, Aug 14 2017, 13:41:13) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello World")
Hello World
>>> exit()

(CS4243) C:\Users\Junbin>pip install jupyter
```

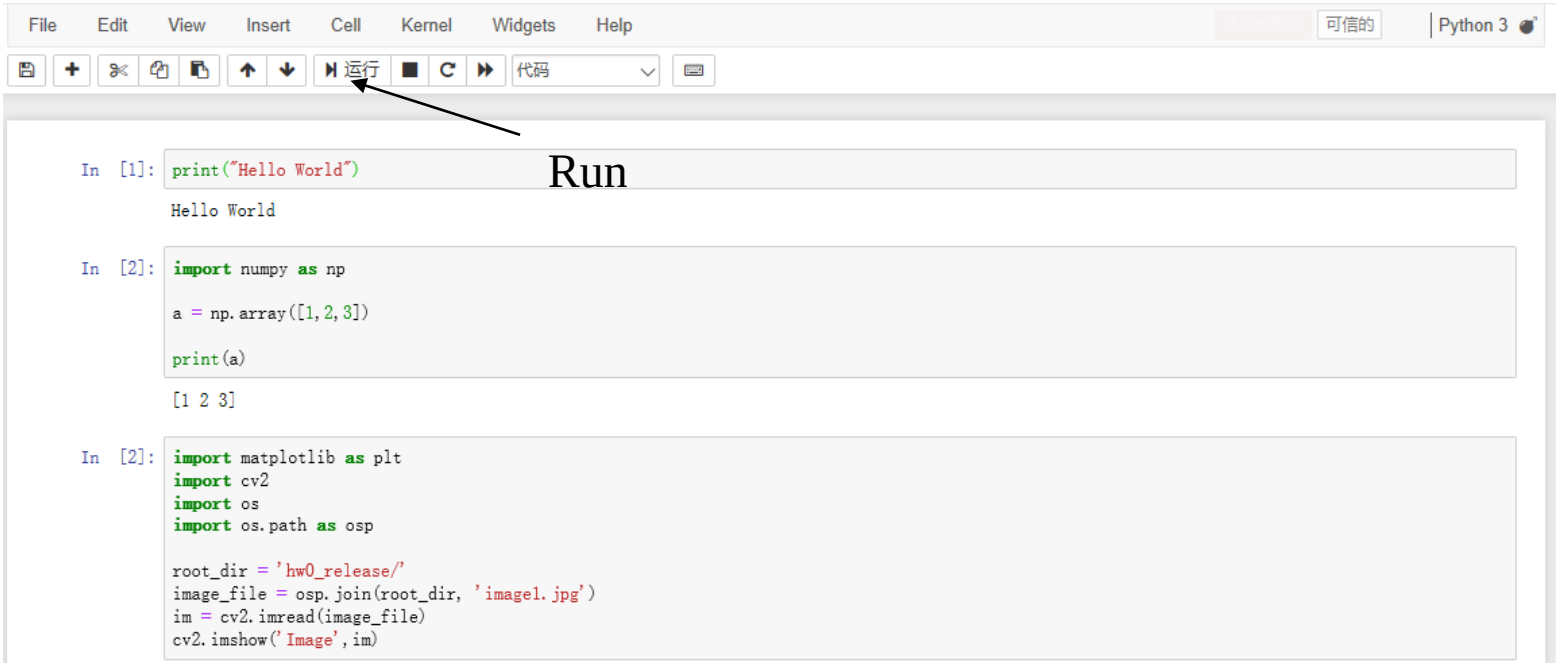
- Navigate to your workspace and start jupyter notebook.

  >jupyter notebook

In your browser, create notebook.

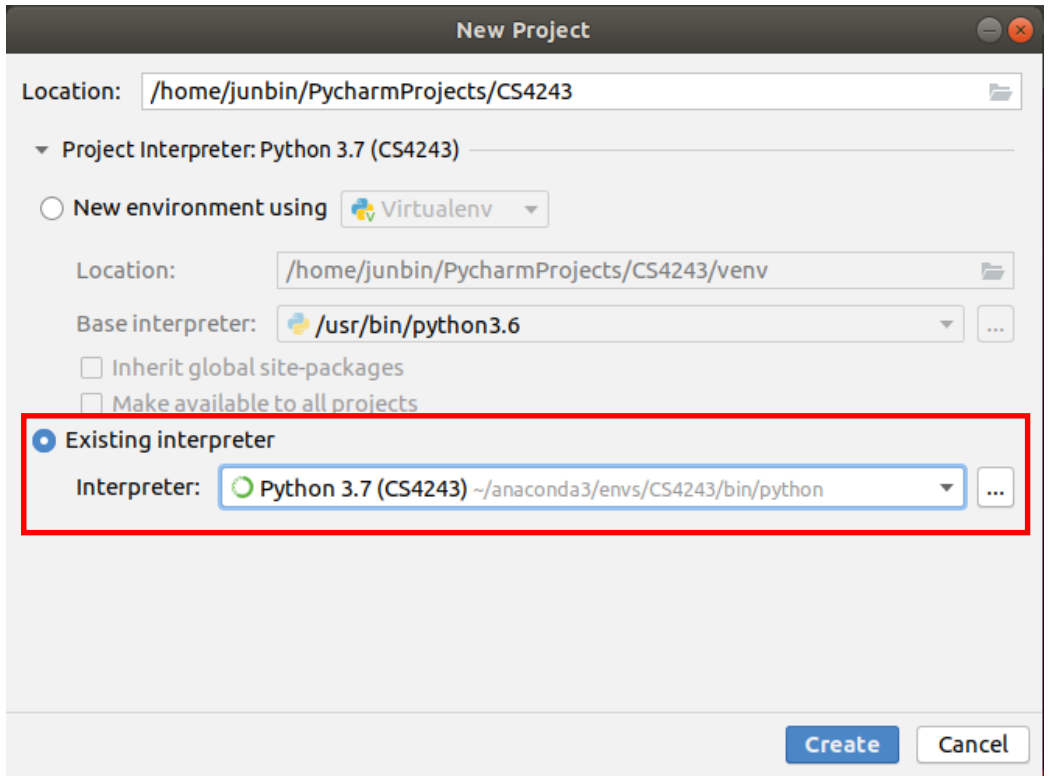


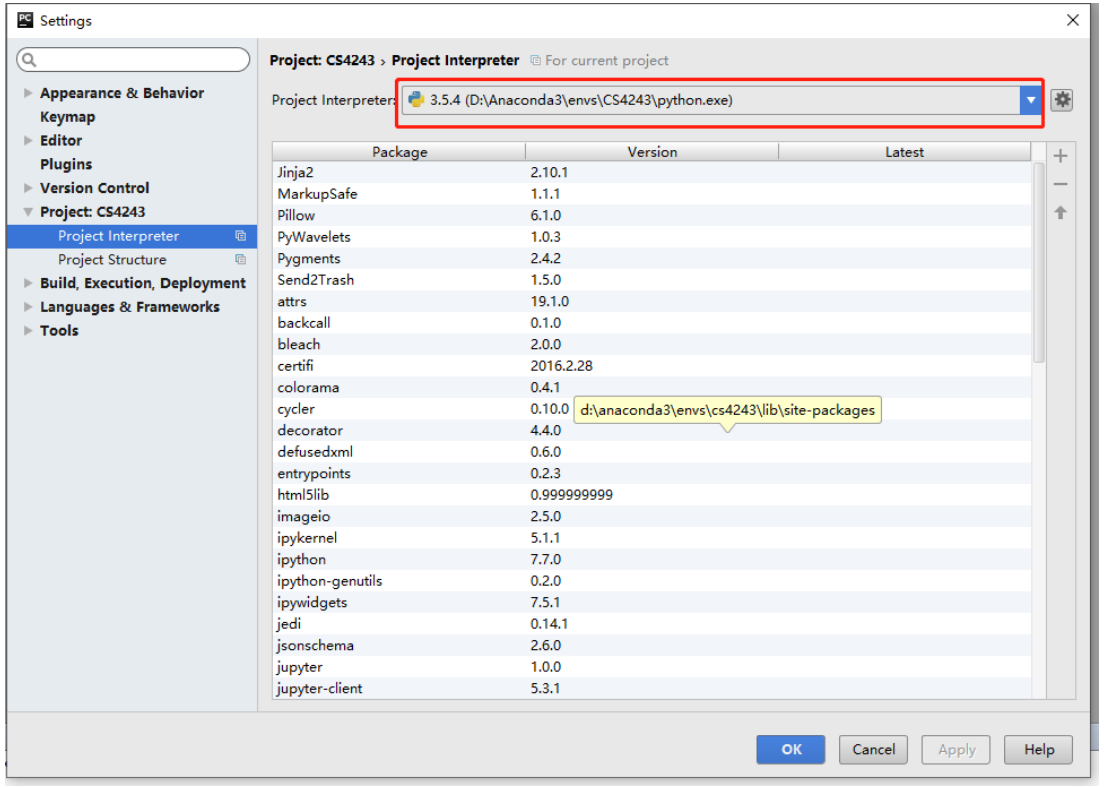
Type some code.

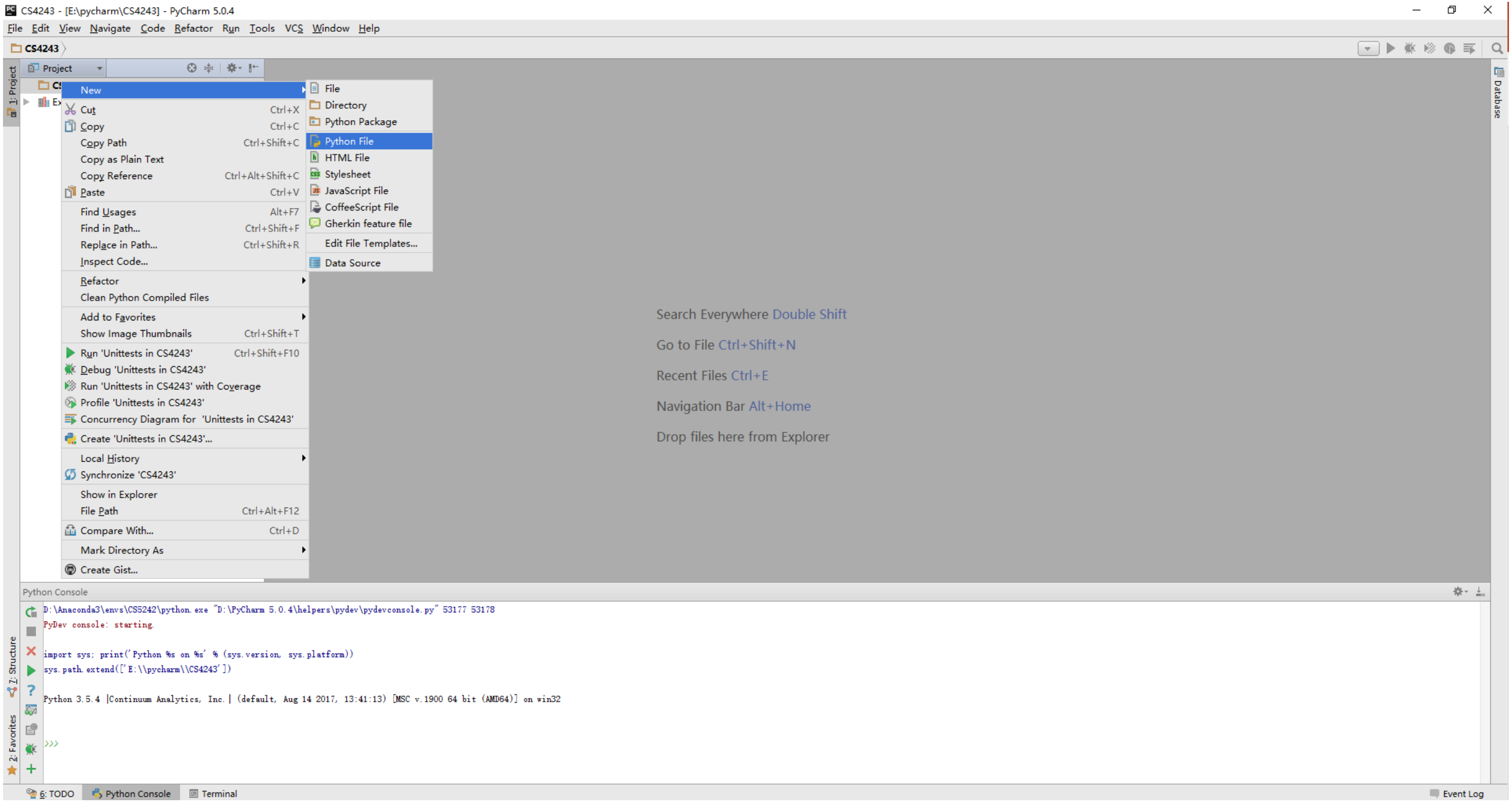


- Install PyCharm: https://www.jetbrains.com/help/pycharm/installation-guide.html
- Create new project, choose the path_to_your_anaconda3/envs/CS4243 as your envs.

Or you can select the right interpreter by file->setting->






CS4243 - [E:\pycharm\CS4243] - PyCharm 5.0.4
File Edit View Navigate Code Refactor Run Tools VCS Window Help
CS4243
Project
New
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy as Plain Text
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Inspect Code...
Refactor
Clean Python Compiled Files
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Run 'Unittests in CS4243' Ctrl+Shift+F10
Debug 'Unittests in CS4243'
Run 'Unittests in CS4243' with Coverage
Profile 'Unittests in CS4243'
Concurrency Diagram for 'Unittests in CS4243'
Create 'Unittests in CS4243'...
Local History
Synchronize 'CS4243'
Show in Explorer
File Path Ctrl+Alt+F12
Compare With... Ctrl+D
Mark Directory As
Create Gist...
File
Directory
Python Package
Python File
HTML File
Stylesheet
JavaScript File
CoffeeScript File
Gherkin feature file
Edit File Templates...
Data Source
Search Everywhere Double Shift
Go to File Ctrl+Shift+N
Recent Files Ctrl+E
Navigation Bar Alt+Home
Drop files here from Explorer
Python Console
D:\Anaconda3\envs\CS5242\python.exe "D:\PyCharm 5.0.4\helpers\pydev\pydevconsole.py" 53177 53178
PyDev console: starting.
import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['E:\\pycharm\\CS4243'])
Python 3.5.4 |Continuum Analytics, Inc.| (default, Aug 14 2017, 13:41:13) [MSC v.1900 64 bit (AMD64)] on win32
>>>
1: Project
2: Favorites
7: Structure
Database
6: TODO
Python Console
Terminal
Event Log

CS4243 - [E:\pycharm\CS4243] - ...\hello.py - PyCharm 5.0.4

File Edit View Navigate Code Refactor Run Tools VCS Window Help

CS4243 > hello.py

hello

Project

CS4243 (E:\pycharm\CS4243)

images

hello.py

External Libraries

hello.py ×

```
7   import cv2
8
9   def sayHello(msg):
10      """
11      Prints the input message to the console
12      :param msg:
13      :return:
14      """
15      print(msg)
16
17  def showImage(image_file):
18      """
19      read image and show
20      :param image_file:
21      :return:
22      """
23      img = cv2.imread(image_file)
24      cv2.imshow(image_file, img)
25      cv2.waitKey(-1)
26
27  def main():
28      msg= 'Hello World'
29      sayHello(msg)
30      image_file = 'images/image1.jpg'
31      showImage(image_file)
32
33  if __name__ == '__main__':
34      main()
```

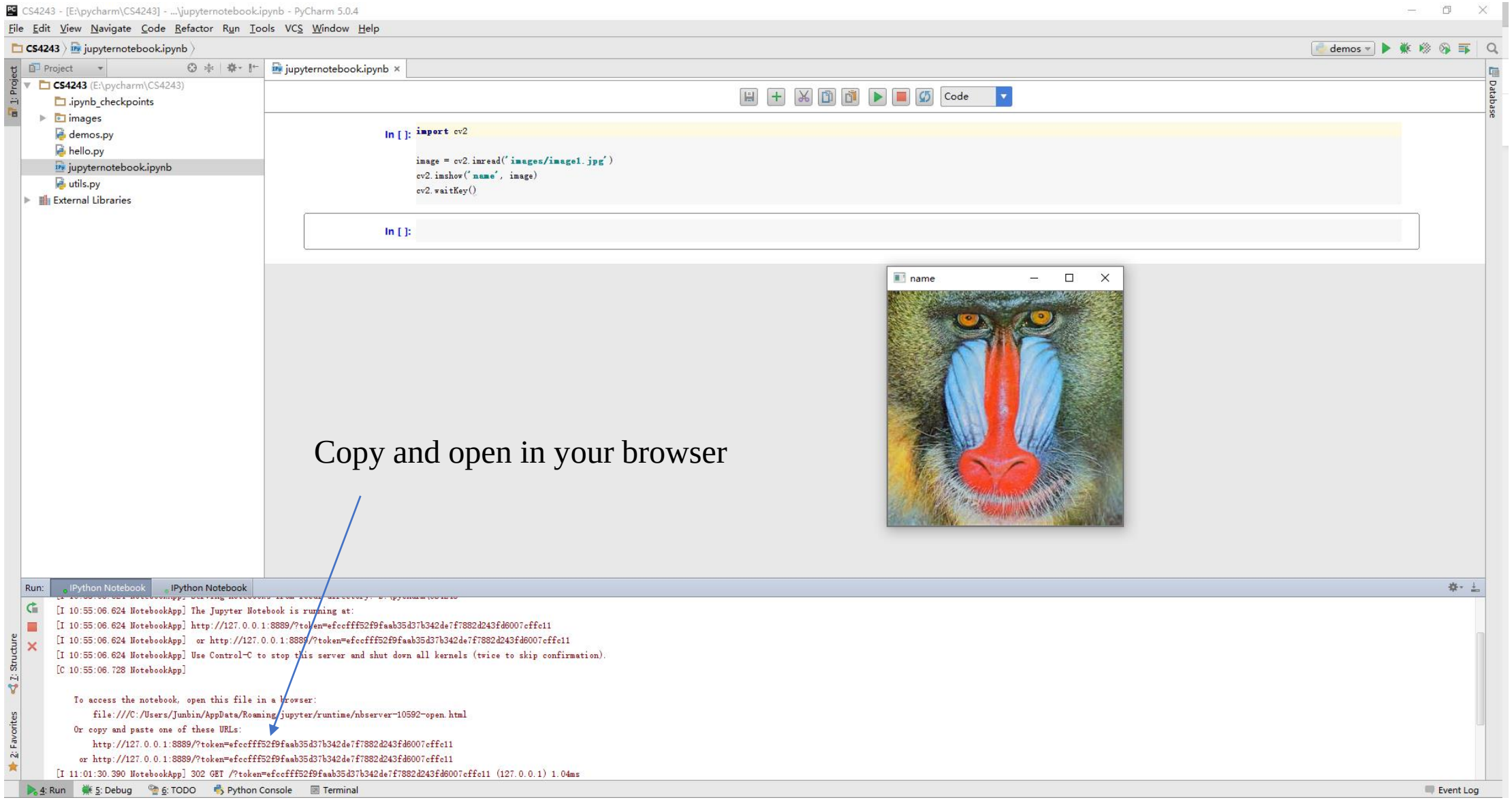
Run hello

```
D:\Anaconda3\envs\CS4243\python.exe E:/pycharm/CS4243/hello.py
Hello World
```

4: Run 6: TODO Python Console Terminal Event Log

3:1 CRLF: UTF-8:

Create any .ipynb file, use jupyter notebook in PyCharm

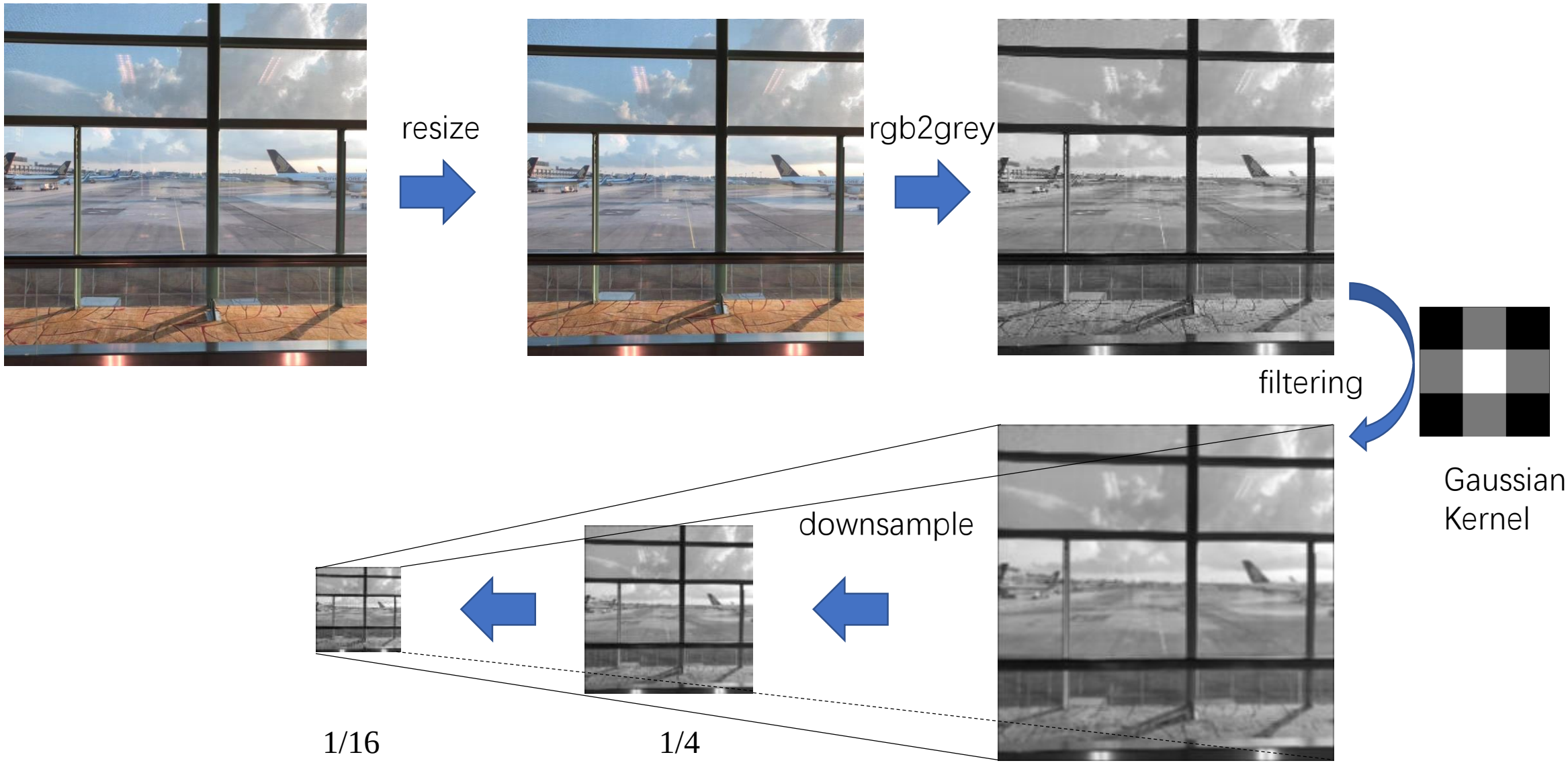


Demo

- read/show/save image.
- resize/rescale/rotate
- rgb2grey
- Image filtering

Exercise

Build a simple “Gaussian Spatial Pyramid” for image.



- **Q&A**

  Join the slack with your (u.nus.edu) email for free question and instant feedback:

  https://join.slack.com/t/cs4243cvpr/signup