



ENME 489Y

UMCP, Mitchell, Spring 2018

- Installing Python: Anaconda & PyCharm

Anaconda & PyCharm

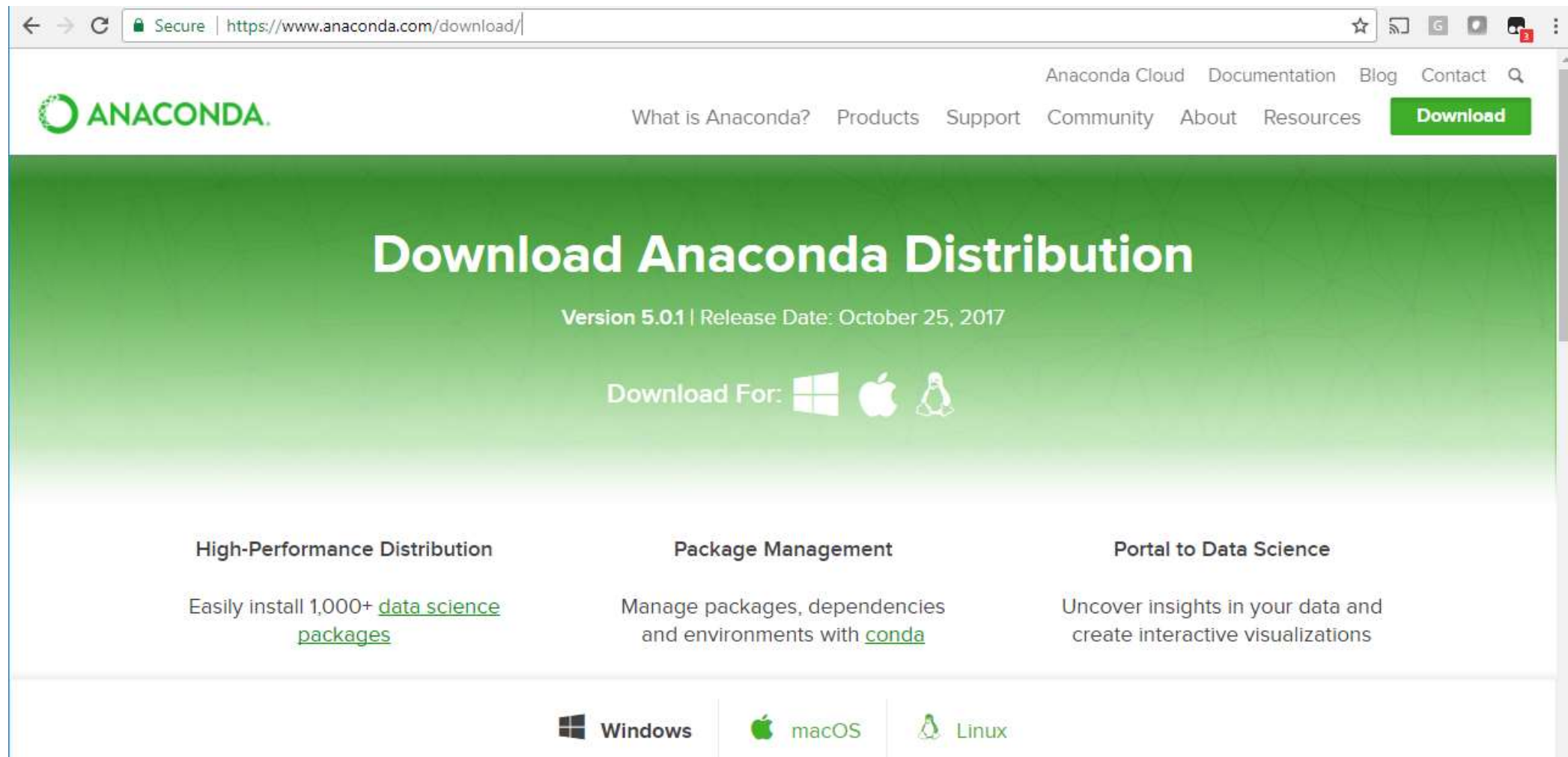
- **Anaconda**: open source distribution of Python aimed at simplifying package management and deployment
- **PyCharm**: an Integrated Development Environment (IDE) used specifically for the Python language

Anaconda & PyCharm

- Begin by downloading & installing both programs

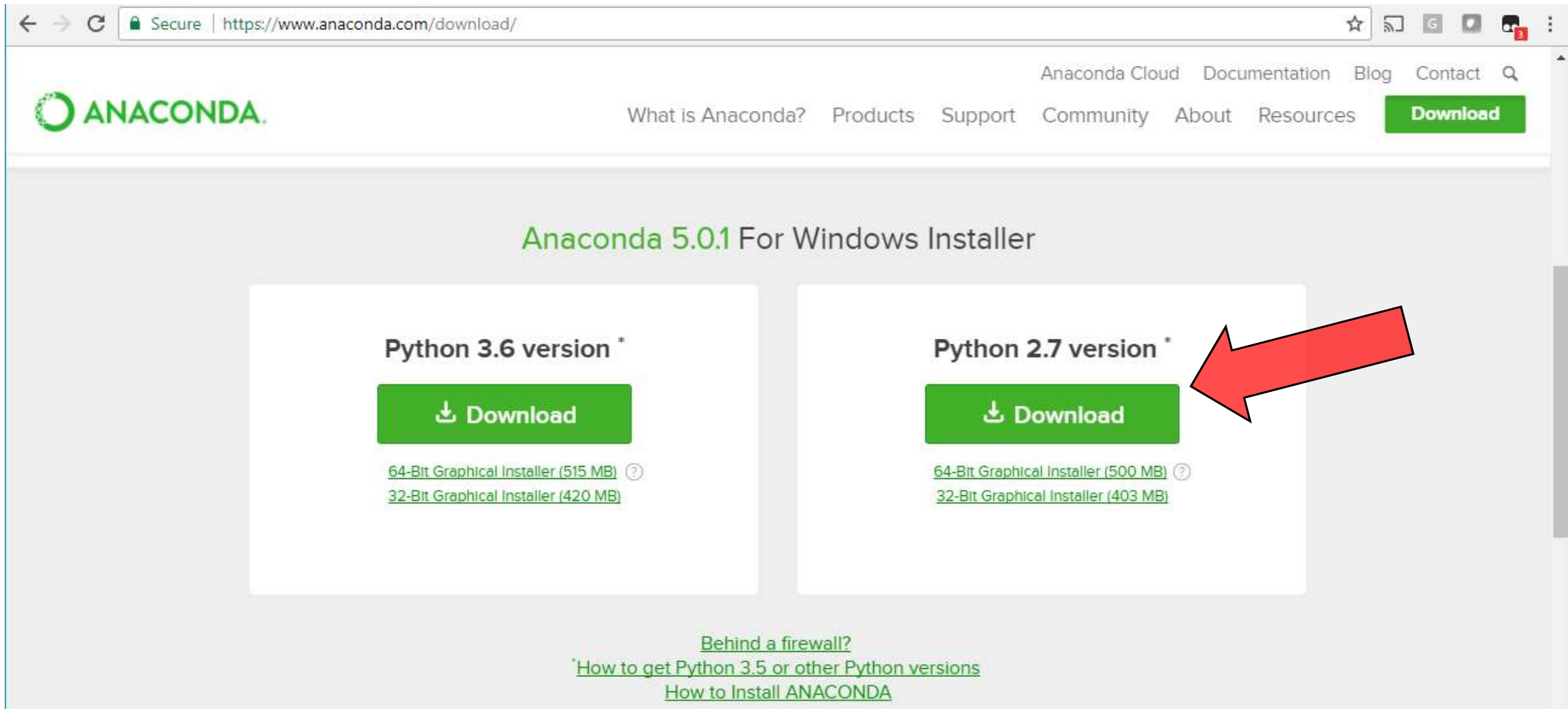
Anaconda

- Download from: <https://www.anaconda.com/download>



Anaconda

- Download from: <https://www.anaconda.com/download>



The screenshot shows the Anaconda website's download page for Windows. The browser's address bar displays the URL <https://www.anaconda.com/download/>. The page features the Anaconda logo and a navigation menu with links to 'Anaconda Cloud', 'Documentation', 'Blog', 'Contact', 'What is Anaconda?', 'Products', 'Support', 'Community', 'About', 'Resources', and a prominent green 'Download' button. The main heading is 'Anaconda 5.0.1 For Windows Installer'. Below this, there are two download options: 'Python 3.6 version *' and 'Python 2.7 version *'. Each option has a green 'Download' button with a download icon. Under the Python 3.6 button, links for '64-Bit Graphical Installer (515 MB)' and '32-Bit Graphical Installer (420 MB)' are provided. Similarly, under the Python 2.7 button, links for '64-Bit Graphical Installer (500 MB)' and '32-Bit Graphical Installer (403 MB)' are shown. A large red arrow points to the 'Download' button for the Python 2.7 version. At the bottom, there are links for 'Behind a firewall?', 'How to get Python 3.5 or other Python versions', and 'How to Install ANACONDA'.

Secure | <https://www.anaconda.com/download/>

ANAconda

Anaconda Cloud Documentation Blog Contact

What is Anaconda? Products Support Community About Resources [Download](#)

Anaconda 5.0.1 For Windows Installer

Python 3.6 version *

[Download](#)

[64-Bit Graphical Installer \(515 MB\)](#) [?](#)
[32-Bit Graphical Installer \(420 MB\)](#)

Python 2.7 version *

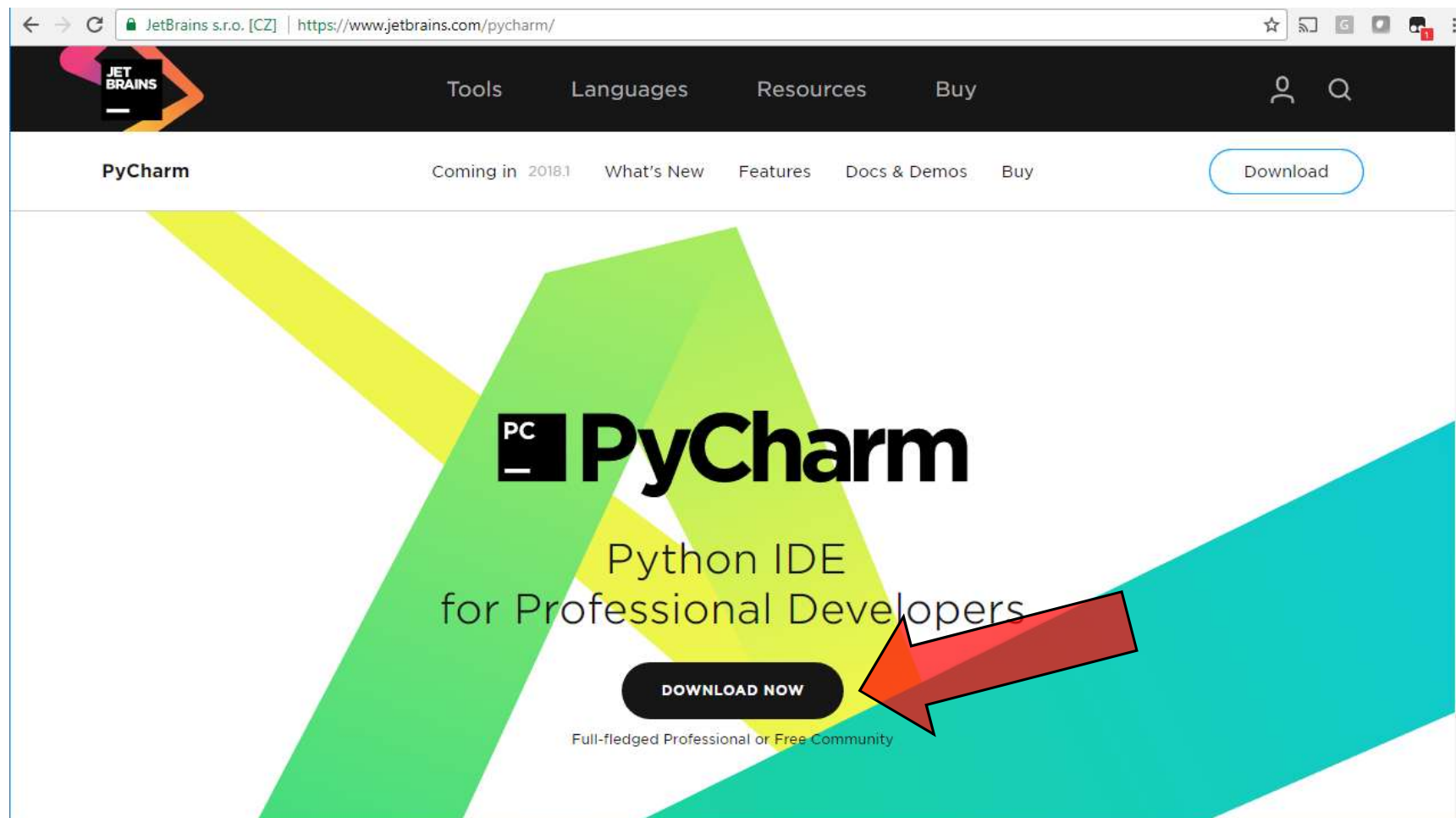
[Download](#)

[64-Bit Graphical Installer \(500 MB\)](#) [?](#)
[32-Bit Graphical Installer \(403 MB\)](#)

[Behind a firewall?](#)
[How to get Python 3.5 or other Python versions](#)
[How to Install ANACONDA](#)

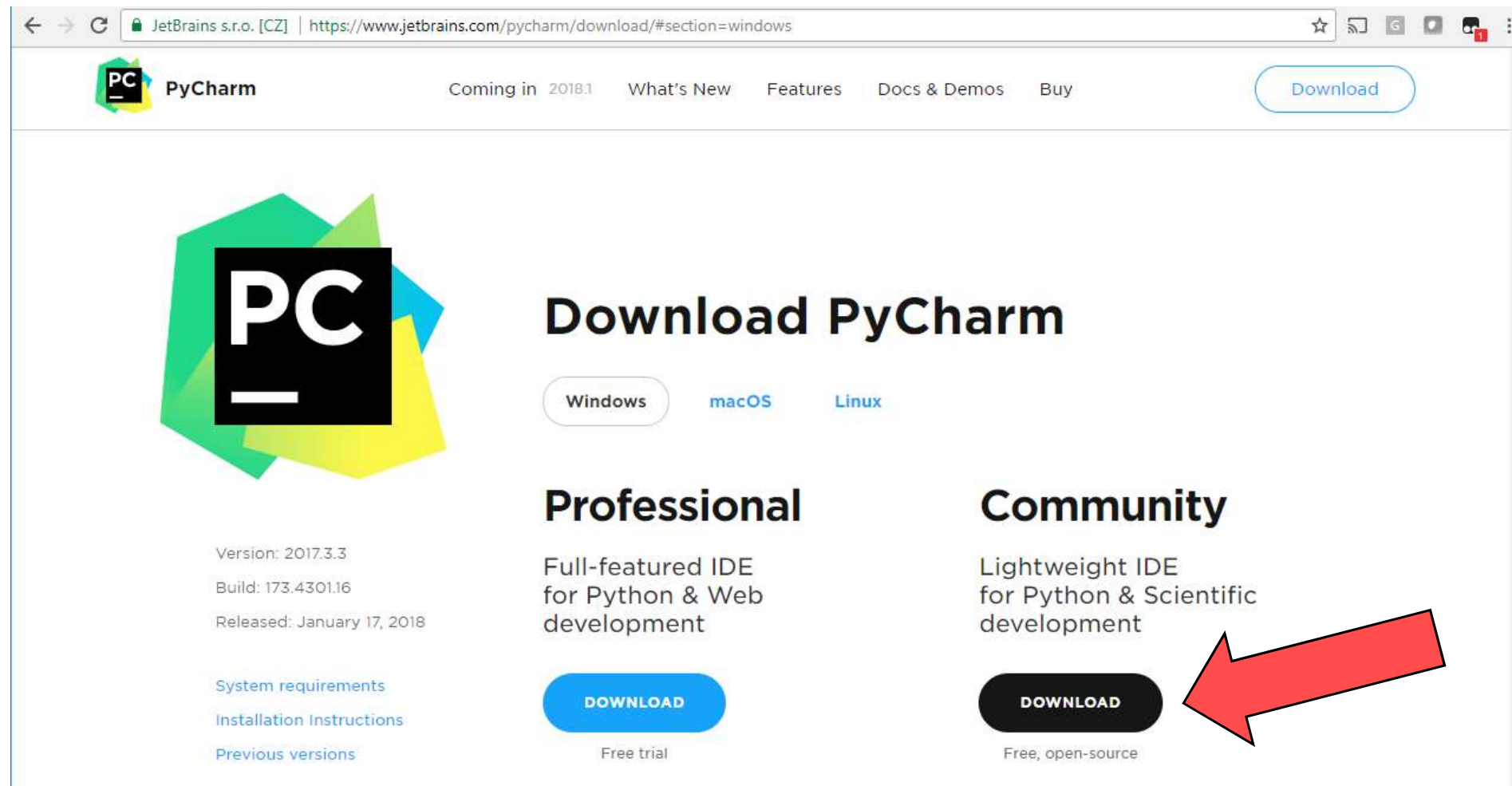
PyCharm

- Download from: <https://www.jetbrains.com/pycharm/>



PyCharm

- Download from: <https://www.jetbrains.com/pycharm/>



The screenshot shows the JetBrains PyCharm download page. The browser address bar displays the URL <https://www.jetbrains.com/pycharm/download/#section=windows>. The page header includes the PyCharm logo, navigation links for 'Coming in 2018.1', 'What's New', 'Features', 'Docs & Demos', and 'Buy', and a 'Download' button. The main content area features the PyCharm logo on the left, which includes version information: 'Version: 2017.3.3', 'Build: 173.4301.16', and 'Released: January 17, 2018'. Below this are links for 'System requirements', 'Installation Instructions', and 'Previous versions'. To the right, the 'Download PyCharm' section offers three tabs: 'Windows' (selected), 'macOS', and 'Linux'. Under the 'Windows' tab, there are two options: 'Professional' and 'Community'. The 'Professional' option is described as a 'Full-featured IDE for Python & Web development' and has a blue 'DOWNLOAD' button with a 'Free trial' label below it. The 'Community' option is described as a 'Lightweight IDE for Python & Scientific development' and has a black 'DOWNLOAD' button with a 'Free, open-source' label below it. A large red arrow points to the 'Community' download button.

PyCharm

Coming in 2018.1 What's New Features Docs & Demos Buy Download

PC

Version: 2017.3.3
Build: 173.4301.16
Released: January 17, 2018

[System requirements](#)
[Installation Instructions](#)
[Previous versions](#)

Download PyCharm

Windows macOS Linux

Professional

Full-featured IDE for Python & Web development

DOWNLOAD

Free trial

Community

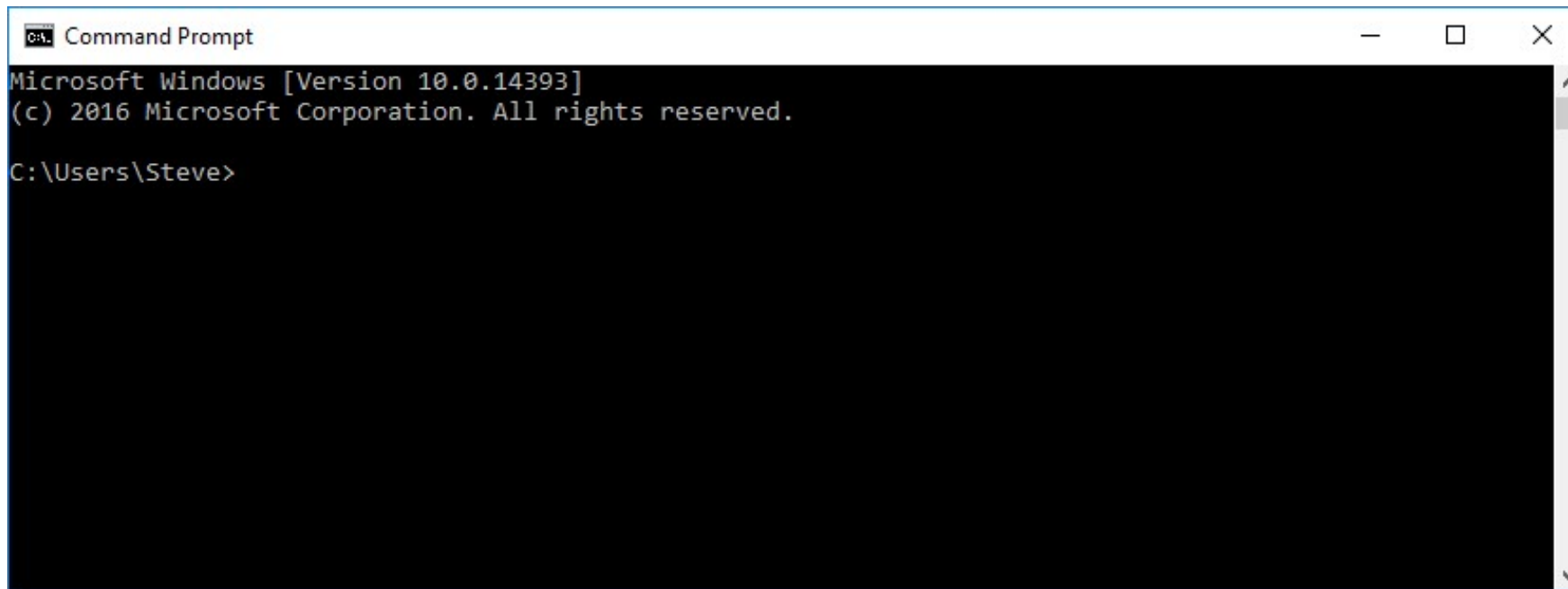
Lightweight IDE for Python & Scientific development

DOWNLOAD

Free, open-source

Installation

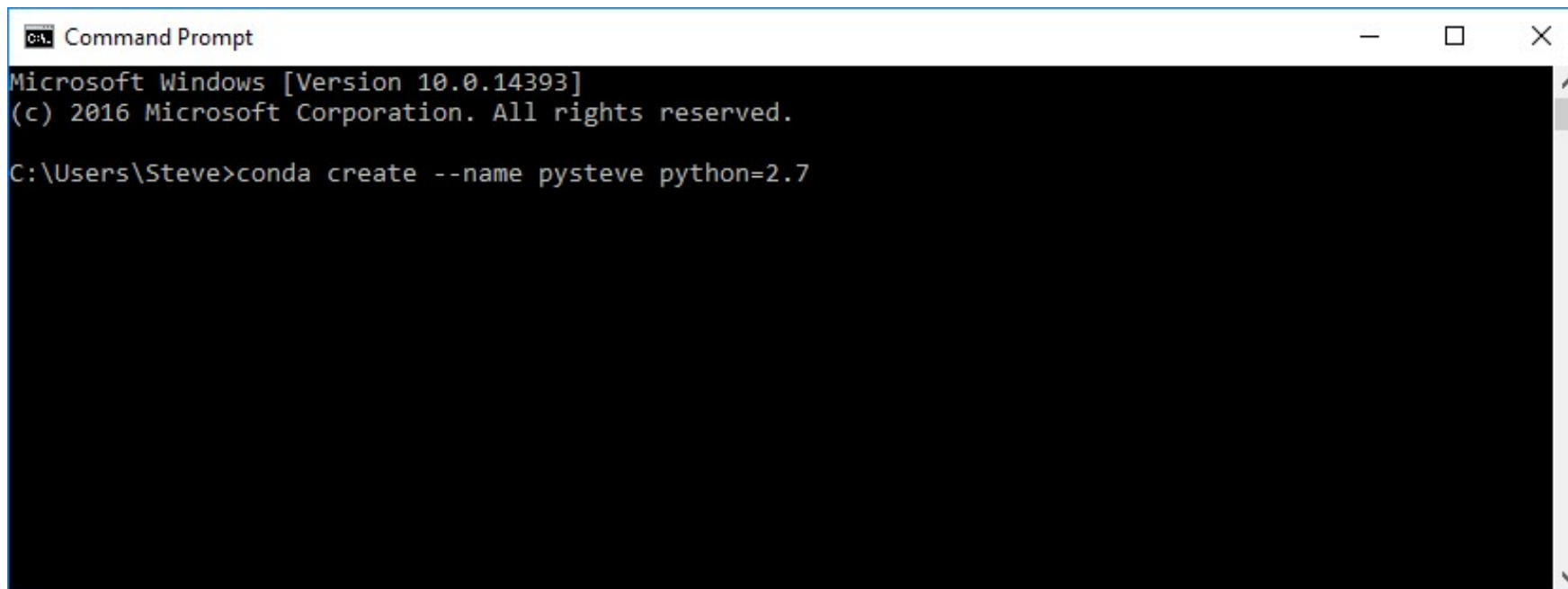
- Open a command line prompt
- In Windows: right-click on Start button > Command Prompt

A screenshot of a Windows Command Prompt window. The title bar at the top reads "C:\> Command Prompt" and includes standard window control buttons (minimize, maximize, close). The main area has a black background with white text. It displays "Microsoft Windows [Version 10.0.14393]" and "(c) 2016 Microsoft Corporation. All rights reserved." followed by the current directory "C:\Users\Steve>" and a blinking cursor.

```
C:\> Command Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.
C:\Users\Steve>
```


Installation

- Type: `conda create --name <name here> python=2.7`
- `<name here>` is the name of the environment you are creating
- This example: `conda create --name pysteve python=2.7`

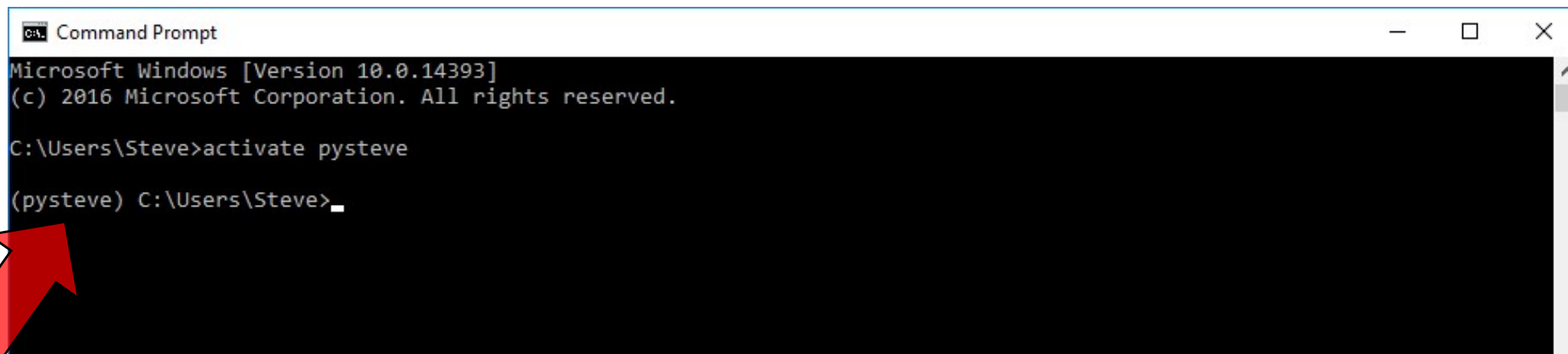


```
Command Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Steve>conda create --name pysteve python=2.7
```

Installation

- Activate the environment
- Type: `activate <name here>`
- This example: `activate pysteve`



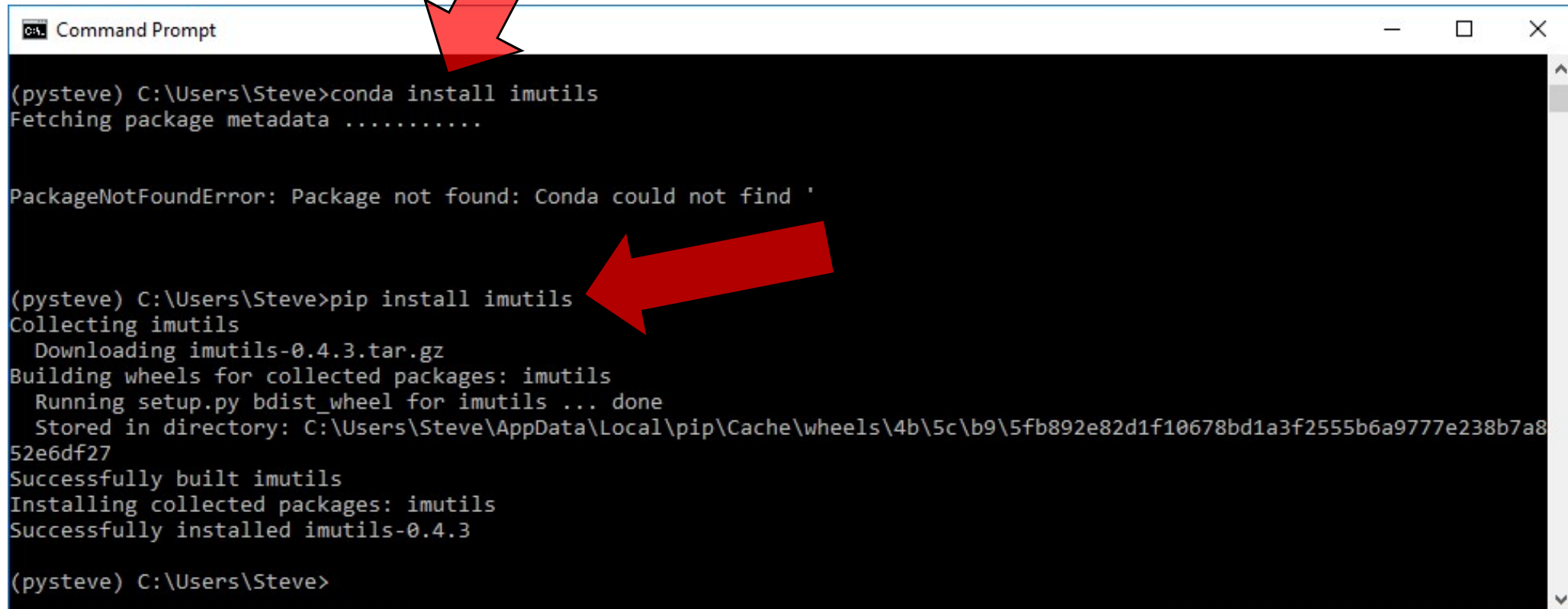
```
Command Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Steve>activate pysteve

(pysteve) C:\Users\Steve>_
```

Installation

- Install desired packages
- Type: `conda install <name here>` or `pip install <name here>`
- For example: `conda install imutils` or `pip install imutils`



```
(pysteve) C:\Users\Steve>conda install imutils
Fetching package metadata .....

PackageNotFoundError: Package not found: Conda could not find '

(pysteve) C:\Users\Steve>pip install imutils
Collecting imutils
  Downloading imutils-0.4.3.tar.gz
Building wheels for collected packages: imutils
  Running setup.py bdist_wheel for imutils ... done
  Stored in directory: C:\Users\Steve\AppData\Local\pip\Cache\wheels\4b\5c\b9\5fb892e82d1f10678bd1a3f2555b6a9777e238b7a852e6df27
Successfully built imutils
Installing collected packages: imutils
Successfully installed imutils-0.4.3

(pysteve) C:\Users\Steve>
```

Installation

- Confirm packages have been installed
- Type: `conda list`
- Lists all packages installed in the `<name here>` environment

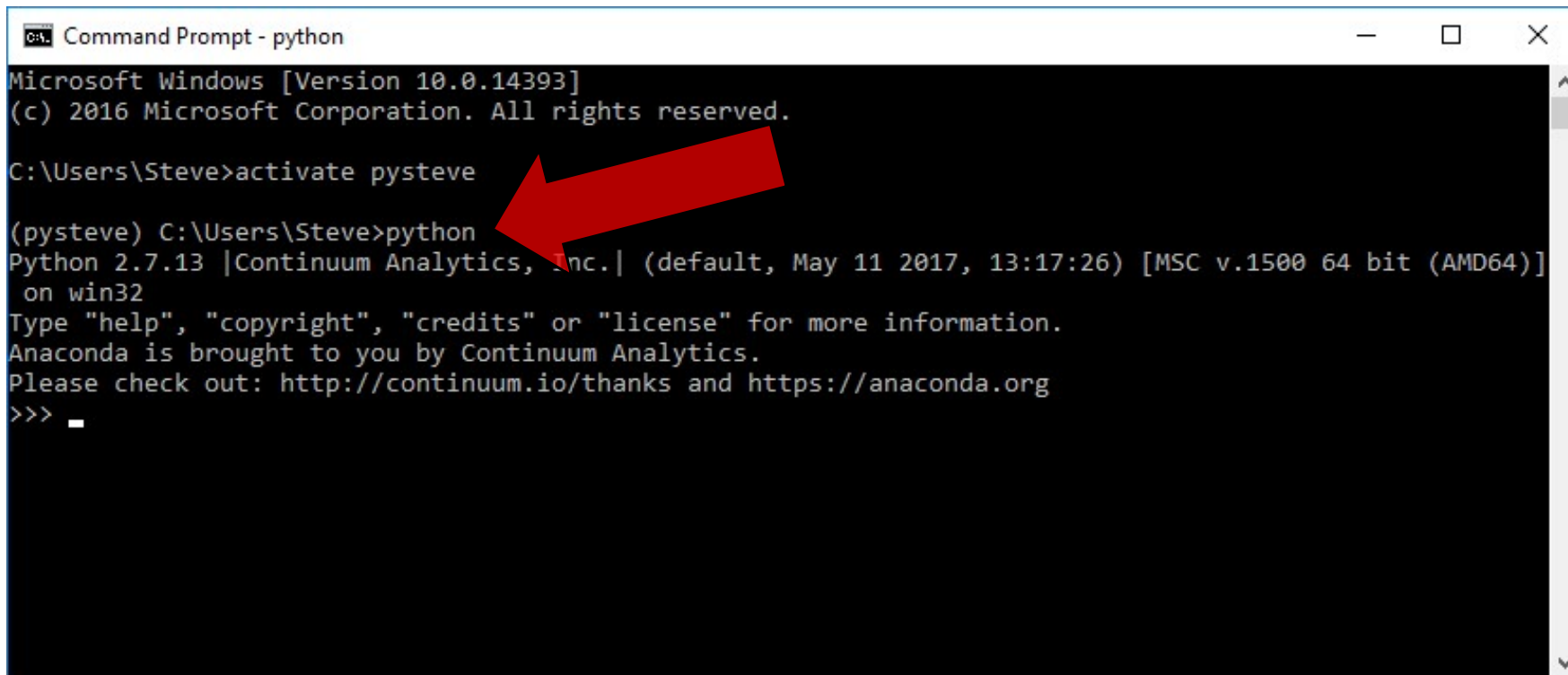
```
Command Prompt

(pysteve) C:\Users\Steve>conda list
# packages in environment at C:\Users\Steve\Anaconda2\envs\pysteve:
#
control                0.7.0                <pip>
cyclor                 0.10.0              py27_0
functools32            3.2.3.2             py27_0
icu                    57.1                vc9_0    [vc9]
jpeg                   9b                  vc9_0    [vc9]
libpng                 1.6.27              vc9_0    [vc9]
matplotlib             2.0.2               np112py27_0
mkl                    2017.0.1            0
mpmath                  0.19                py27_1
numpy                  1.12.1              py27_0
opencv3                3.1.0               py27_0    menpo
openssl                1.0.2k              vc9_0    [vc9]
pip                    9.0.1               py27_1
pyparsing              2.1.4               py27_0
pyqt                   5.6.0               py27_2
python                 2.7.13              1
python-dateutil        2.6.0               py27_0
pytz                   2017.2              py27_0
qt                     5.6.2               vc9_4    [vc9]
scipy                  0.19.0              np112py27_0
setuptools             27.2.0              py27_1
sip                    4.18                py27_0
six                    1.10.0              py27_0
subprocess32           3.2.7               py27_0
sympy                  1.0                  py27_0
tk                     8.5.18              vc9_0    [vc9]
vs2008_runtime         9.00.30729.5054     0
wheel                  0.29.0              py27_0
zlib                   1.2.8               vc9_3    [vc9]

(pysteve) C:\Users\Steve>
```

Installation

- Confirm packages function properly
- Open Python by typing: `python`



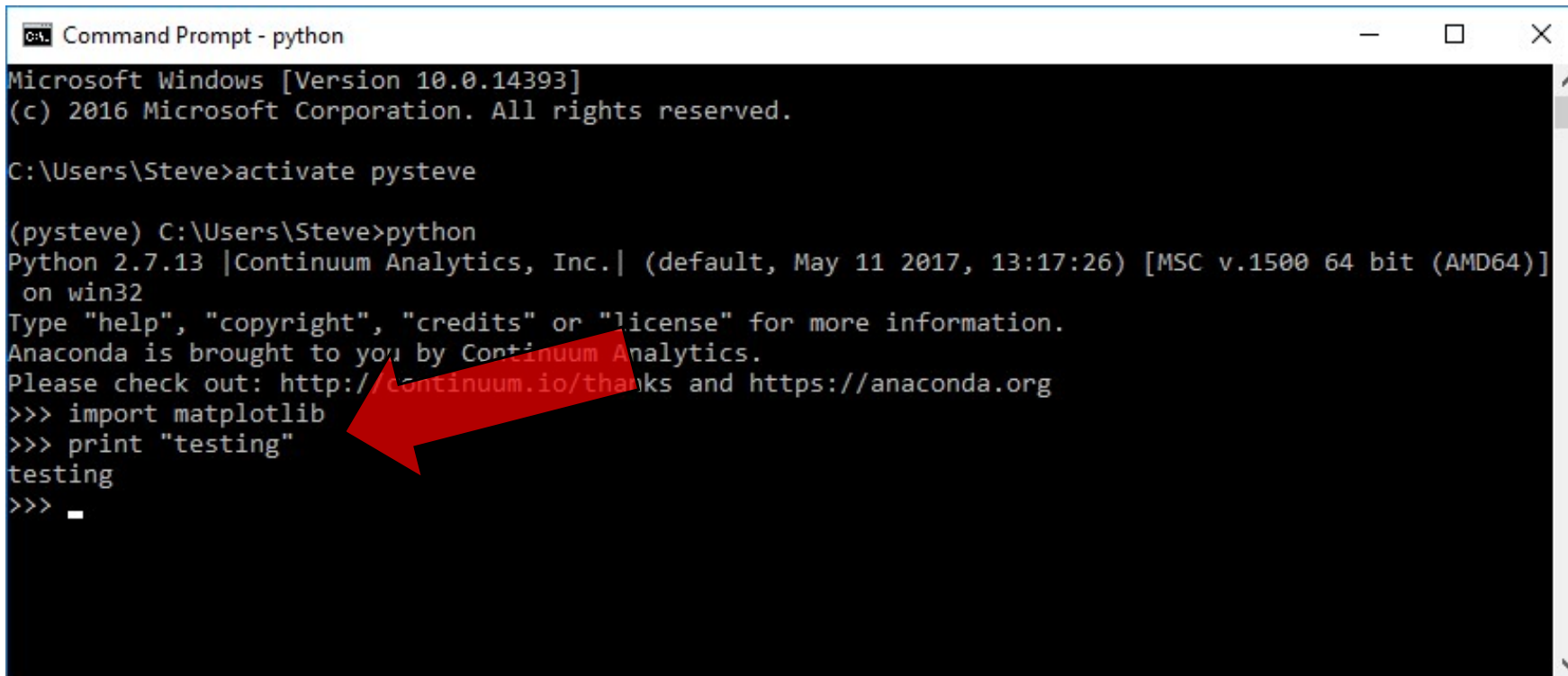
```
Command Prompt - python
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Steve>activate pysteve

(pysteve) C:\Users\Steve>python
Python 2.7.13 |Continuum Analytics, Inc.| (default, May 11 2017, 13:17:26) [MSC v.1500 64 bit (AMD64)]
on win32
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> _
```

Installation

- Confirm packages function properly
- Import matplotlib by typing: `python` <Enter> then `print "testing"`



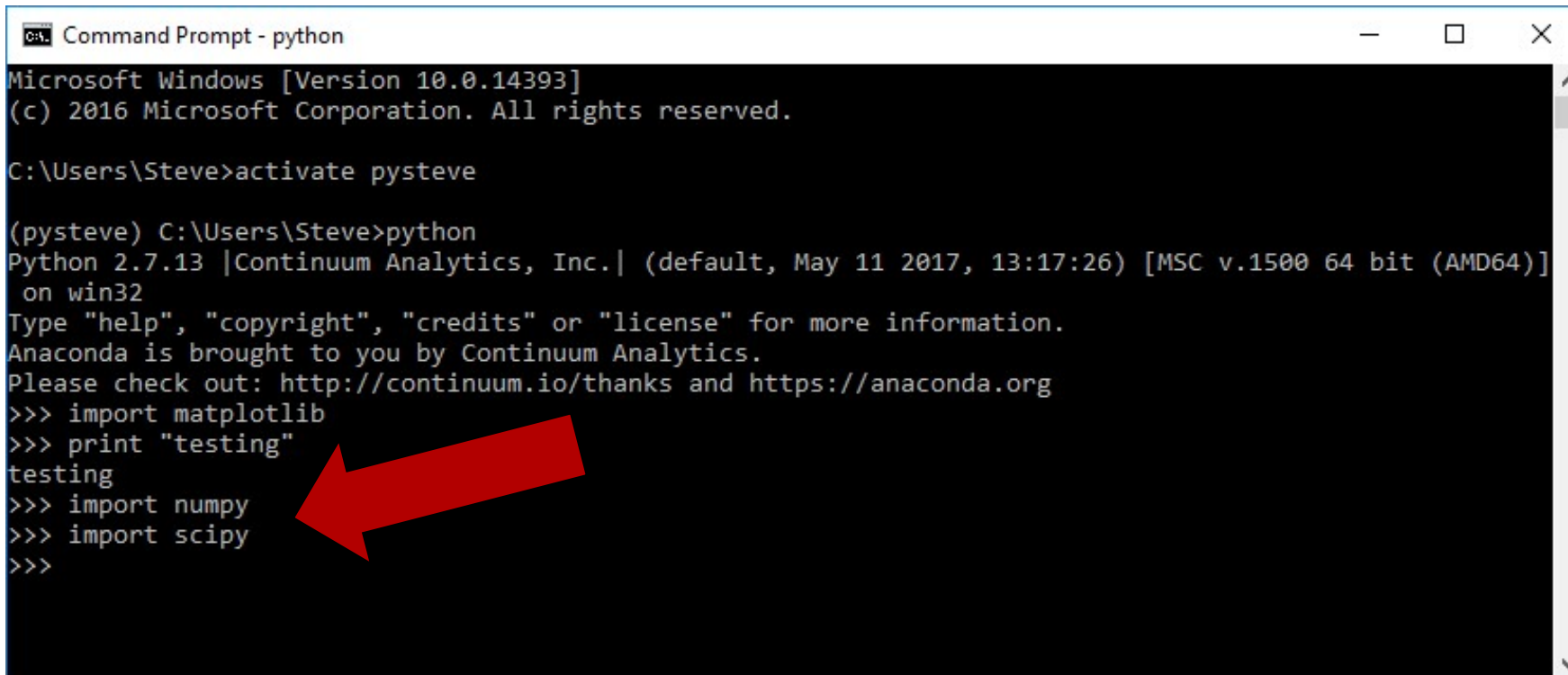
```
Command Prompt - python
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Steve>activate pysteve

(pysteve) C:\Users\Steve>python
Python 2.7.13 |Continuum Analytics, Inc.| (default, May 11 2017, 13:17:26) [MSC v.1500 64 bit (AMD64)]
on win32
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> import matplotlib
>>> print "testing"
testing
>>> _
```


Installation

- Confirm packages function properly
- Import numpy and scipy: `import numpy` and `import scipy`



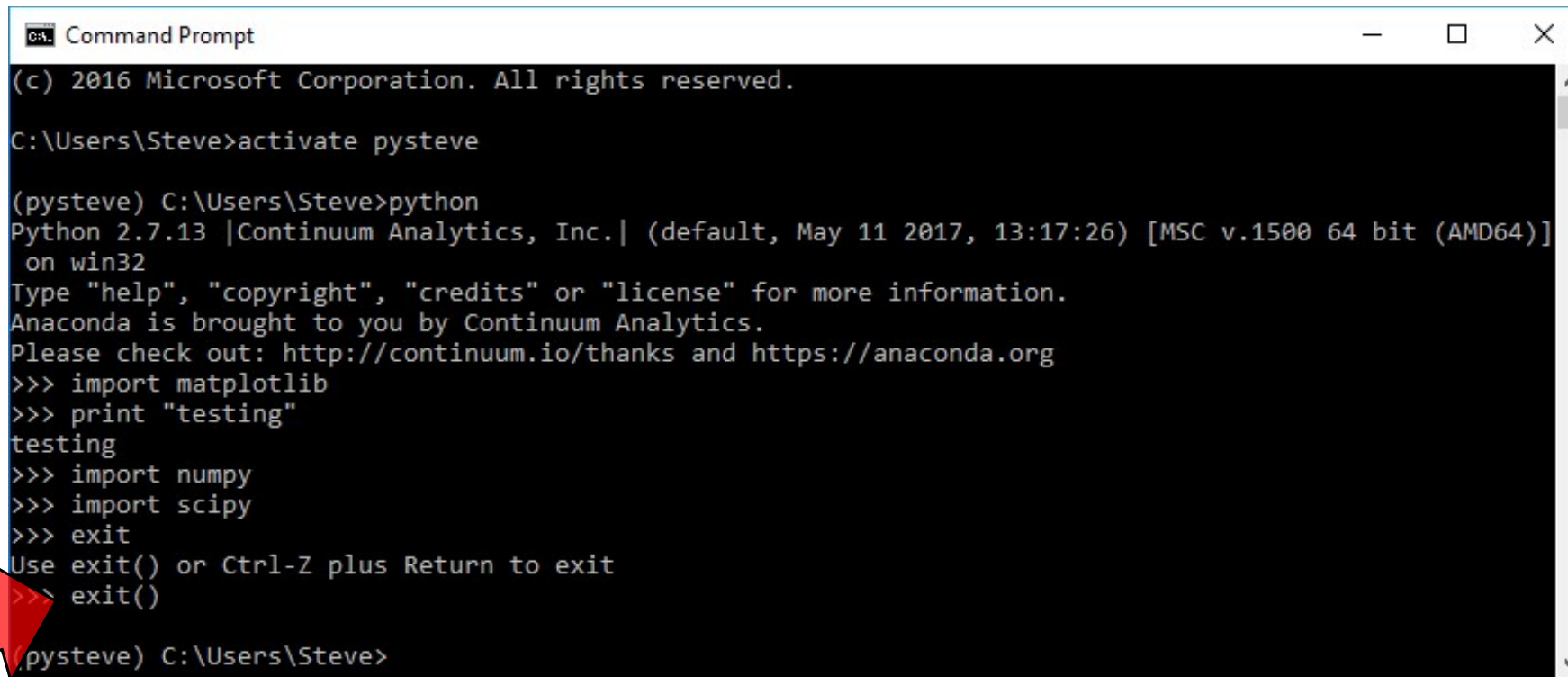
```
Command Prompt - python
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Steve>activate pysteve

(pysteve) C:\Users\Steve>python
Python 2.7.13 |Continuum Analytics, Inc.| (default, May 11 2017, 13:17:26) [MSC v.1500 64 bit (AMD64)]
on win32
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> import matplotlib
>>> print "testing"
testing
>>> import numpy
>>> import scipy
>>>
```

Installation

- Confirm packages function properly
- Exit Python by typing: `exit()`



```
Command Prompt
(c) 2016 Microsoft Corporation. All rights reserved.

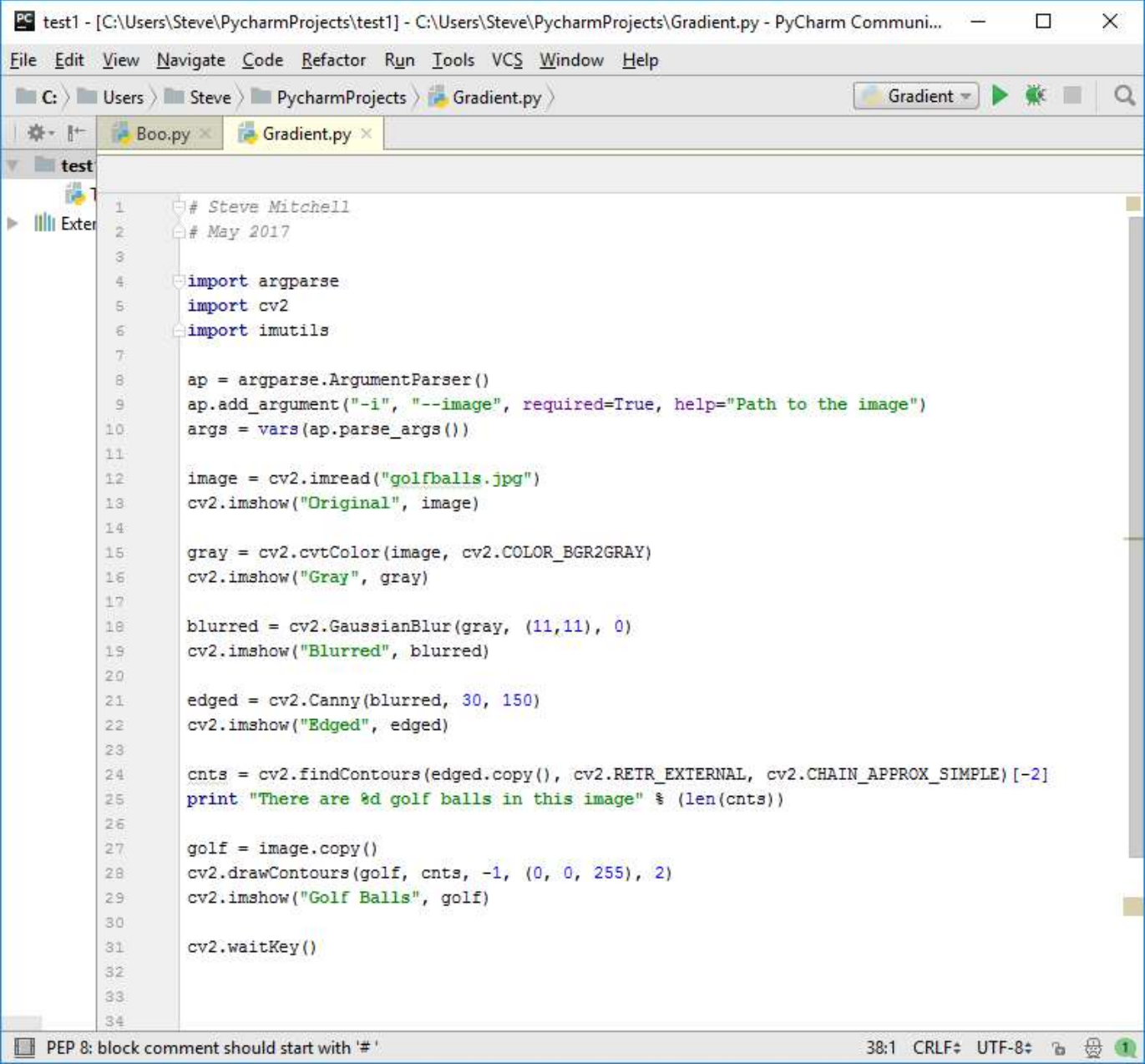
C:\Users\Steve>activate pysteve

(pysteve) C:\Users\Steve>python
Python 2.7.13 |Continuum Analytics, Inc.| (default, May 11 2017, 13:17:26) [MSC v.1500 64 bit (AMD64)]
on win32
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> import matplotlib
>>> print "testing"
testing
>>> import numpy
>>> import scipy
>>> exit
Use exit() or Ctrl-Z plus Return to exit
>>> exit()

(pysteve) C:\Users\Steve>
```

Installation

- Open PyCharm



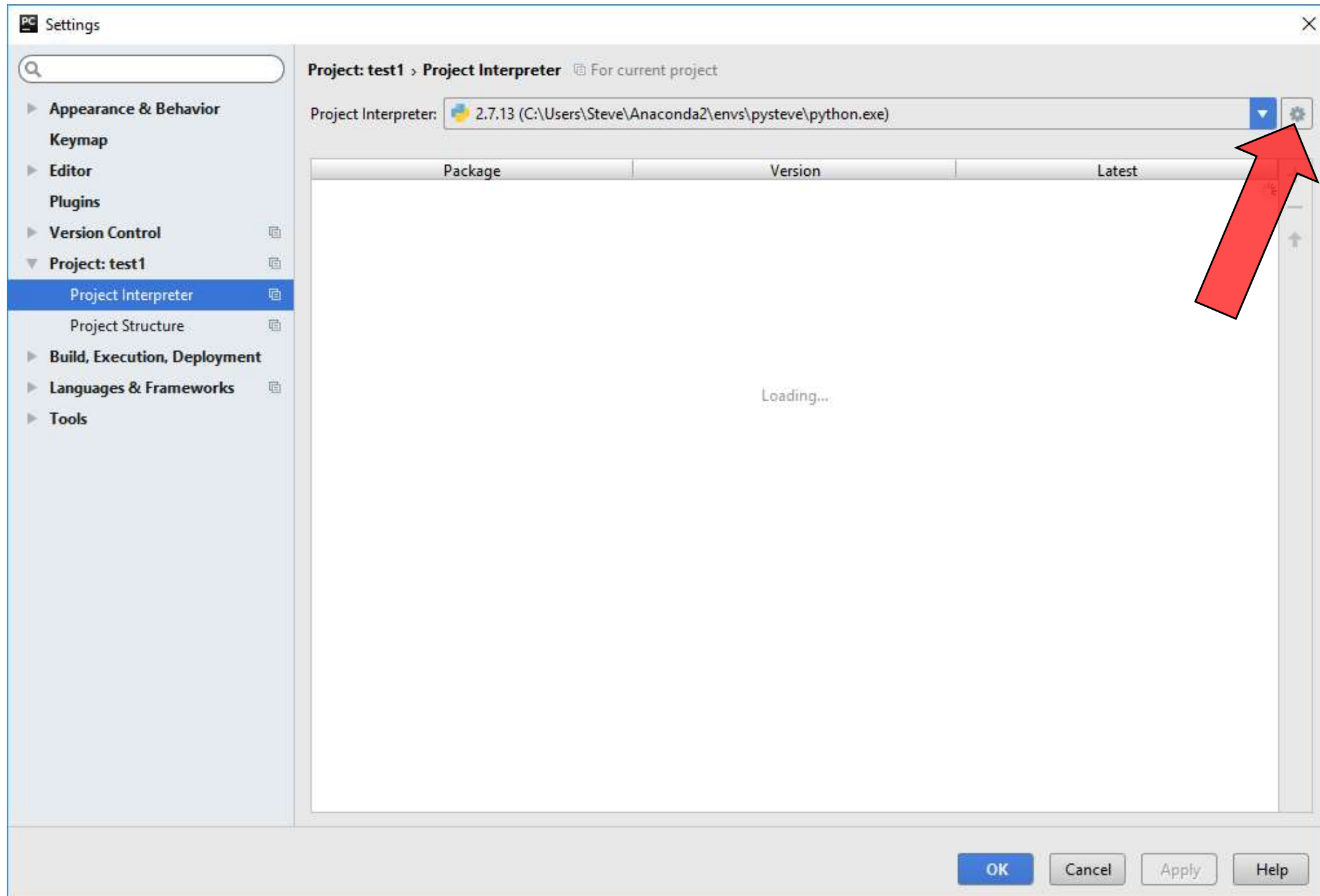
The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The breadcrumb navigation shows the path: C:\Users\Steve\PycharmProjects\test1 - C:\Users\Steve\PycharmProjects\Gradient.py. The editor window displays a Python script named Gradient.py with the following code:

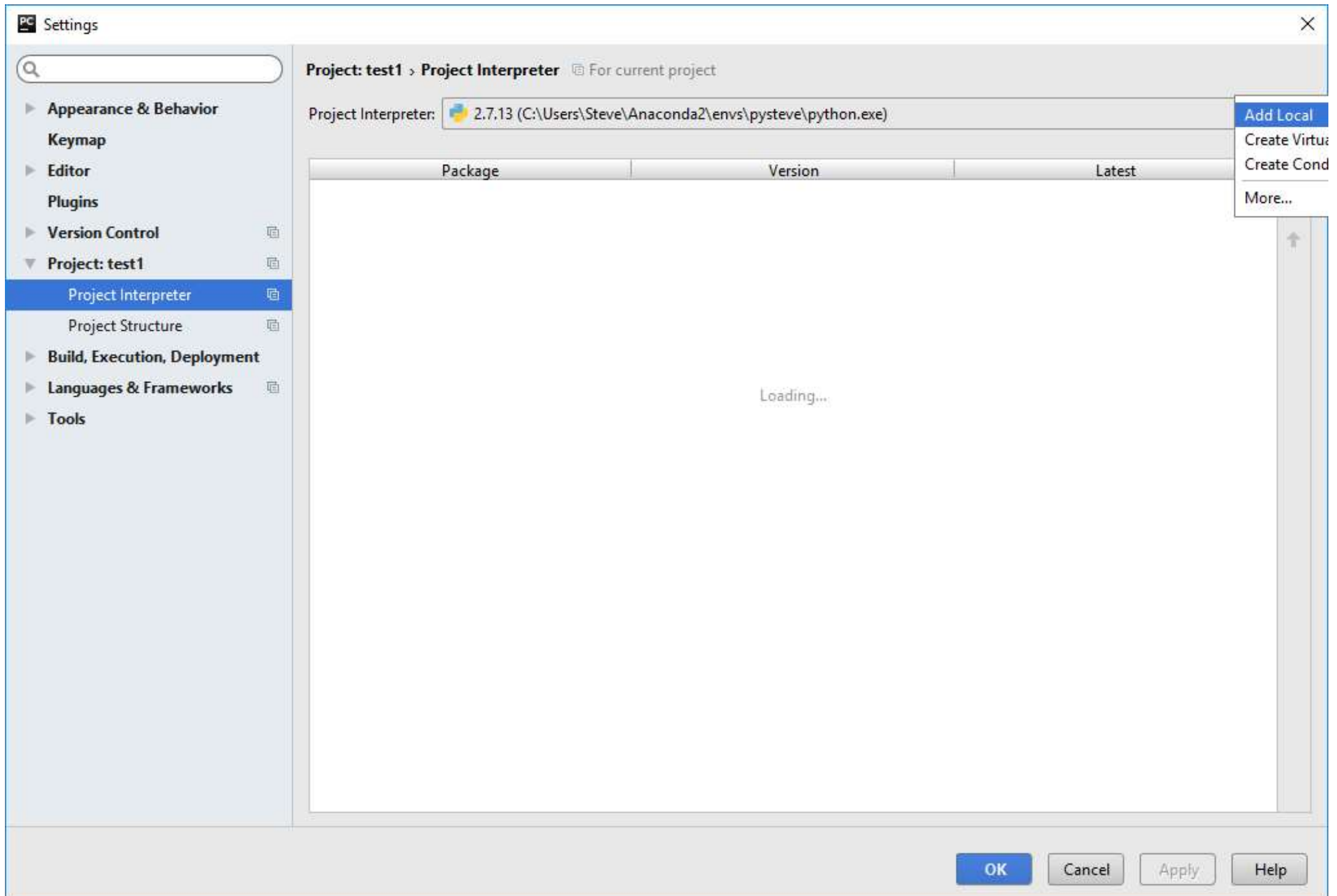
```
1 # Steve Mitchell
2 # May 2017
3
4 import argparse
5 import cv2
6 import imutils
7
8 ap = argparse.ArgumentParser()
9 ap.add_argument("-i", "--image", required=True, help="Path to the image")
10 args = vars(ap.parse_args())
11
12 image = cv2.imread("golfballs.jpg")
13 cv2.imshow("Original", image)
14
15 gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
16 cv2.imshow("Gray", gray)
17
18 blurred = cv2.GaussianBlur(gray, (11,11), 0)
19 cv2.imshow("Blurred", blurred)
20
21 edged = cv2.Canny(blurred, 30, 150)
22 cv2.imshow("Edged", edged)
23
24 cnts = cv2.findContours(edged.copy(), cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_SIMPLE)[-2]
25 print "There are %d golf balls in this image" % (len(cnts))
26
27 golf = image.copy()
28 cv2.drawContours(golf, cnts, -1, (0, 0, 255), 2)
29 cv2.imshow("Golf Balls", golf)
30
31 cv2.waitKey()
```

The status bar at the bottom indicates a PEP 8 warning: "PEP 8: block comment should start with '#'" and shows the cursor position as 38:1, along with encoding settings CRLF and UTF-8.

Installation

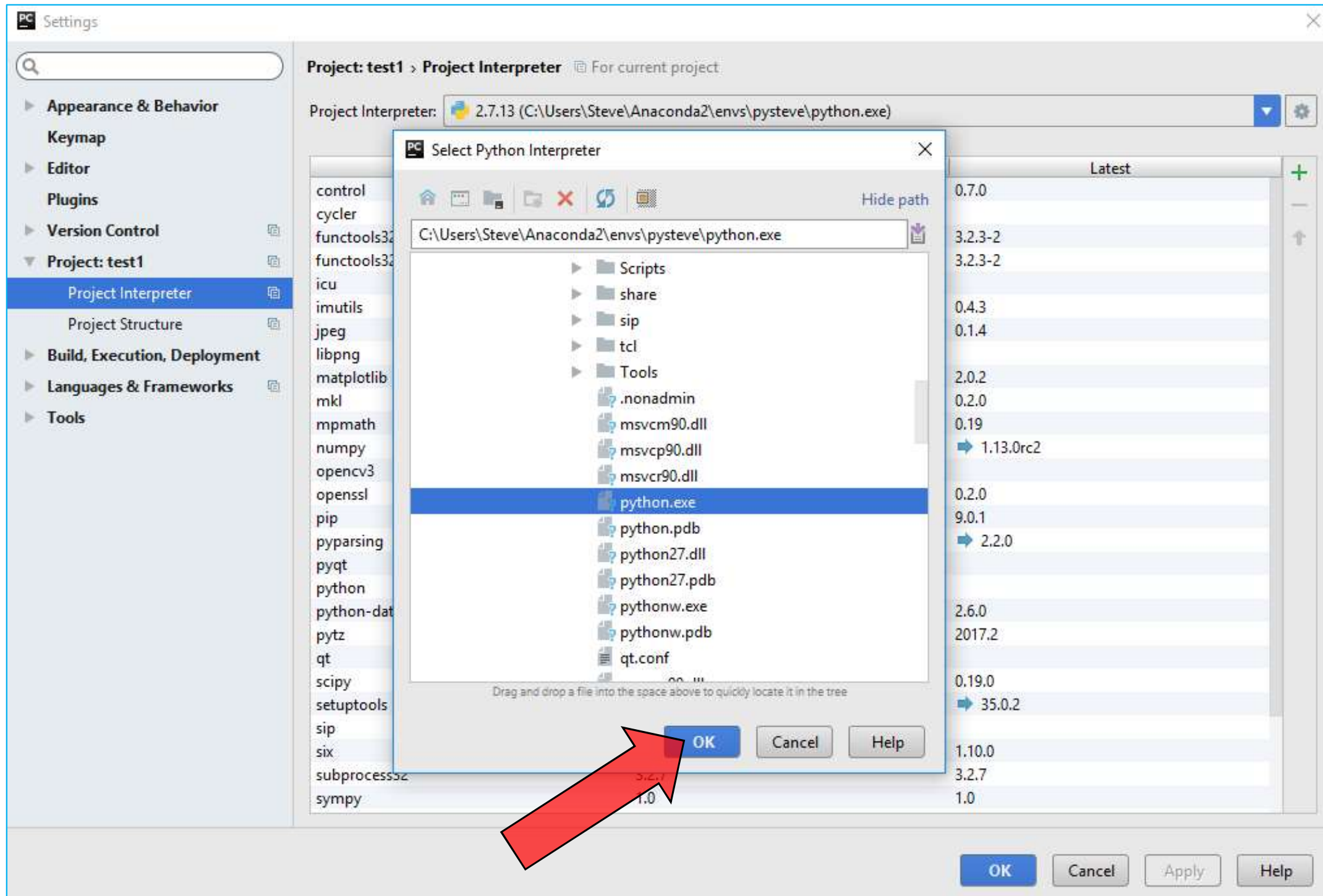
- Add local environment
- File > Settings
- Project Interpreter
- Add Local





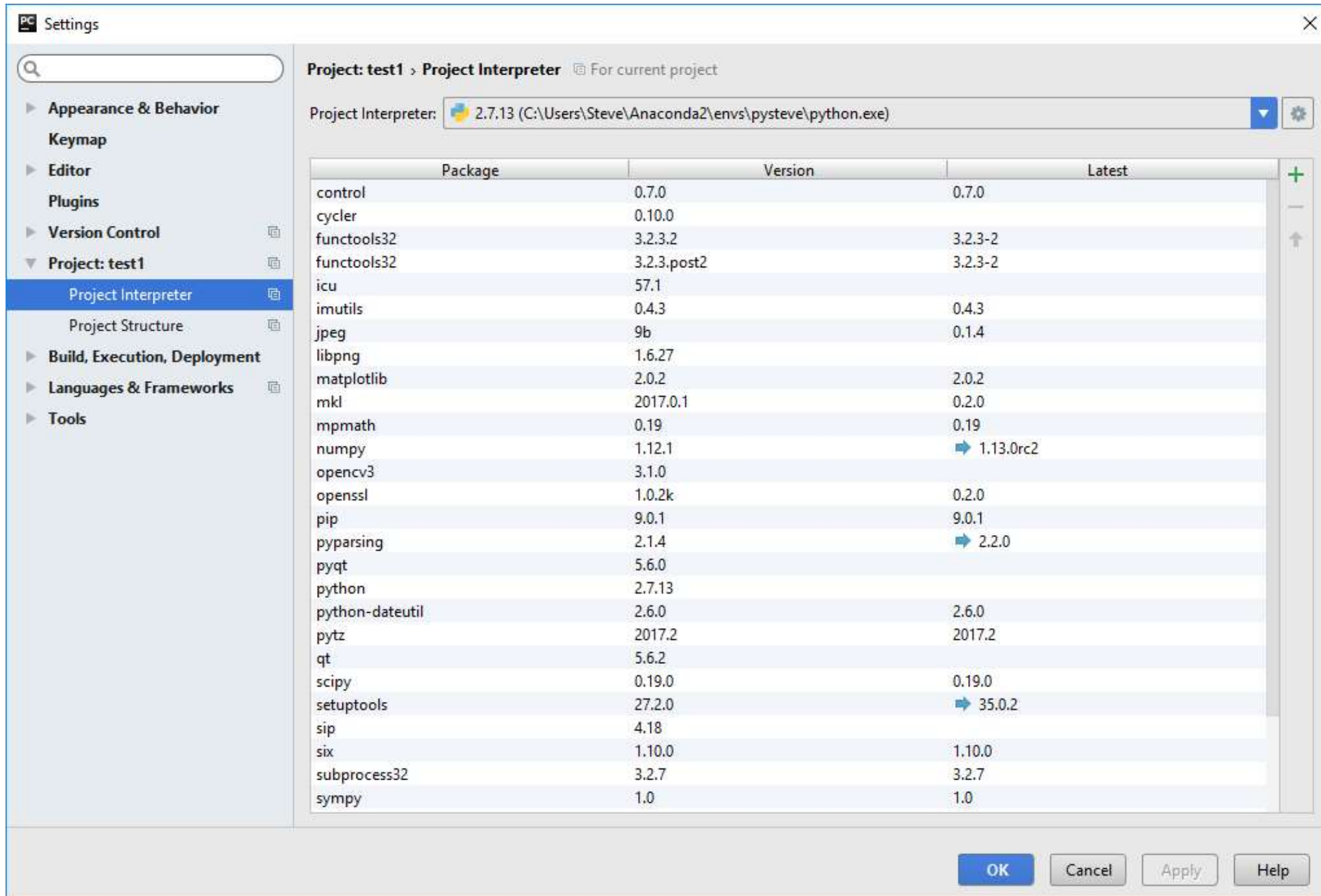
Installation

- Add local environment
- Locate python.exe in recently created environment
- Click **OK**



Installation

- Similar to typing `conda list` in the Command Prompt, installed packages are listed in PyCharm

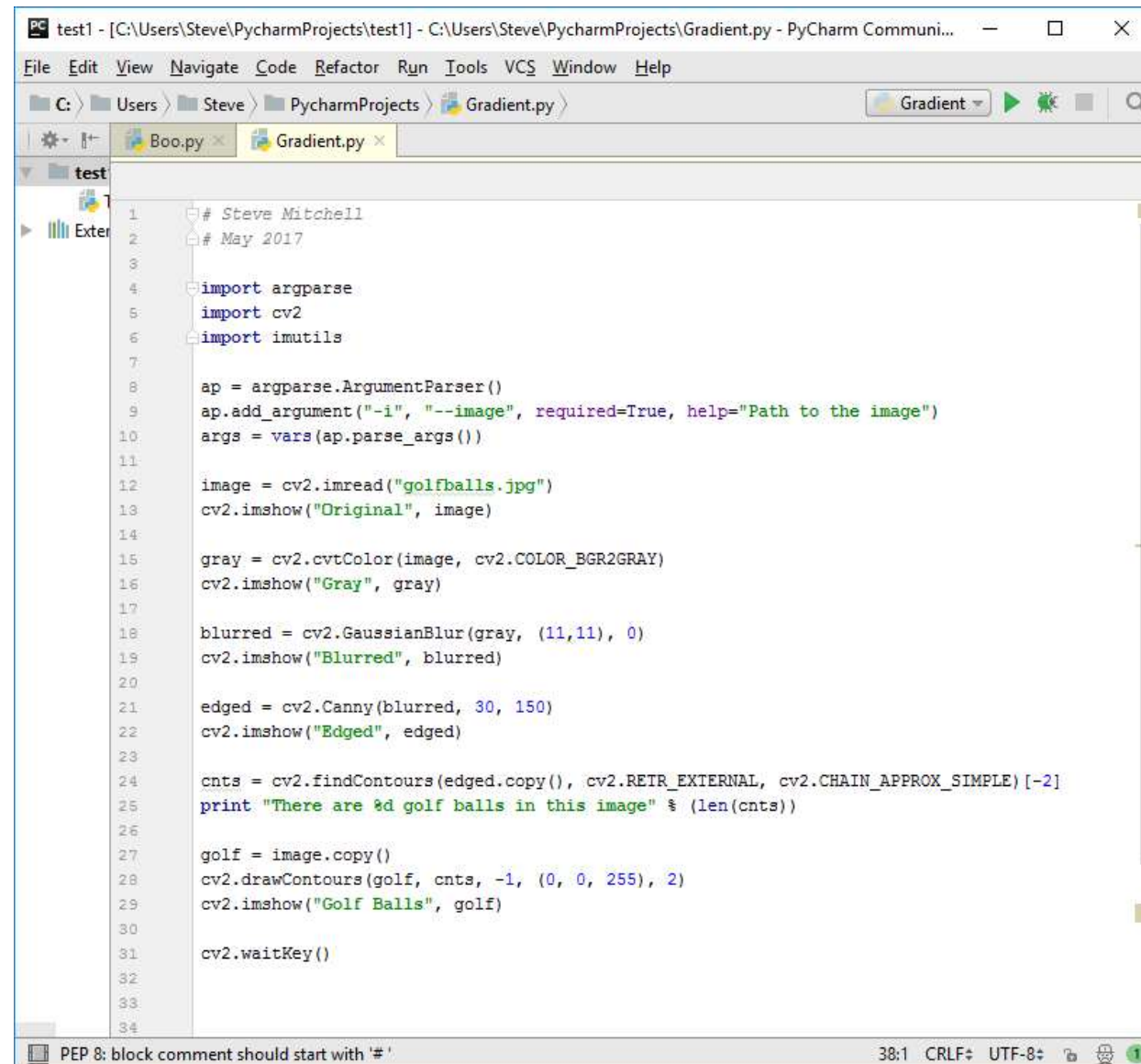


Installation

- Additional packages can be added at any time by returning to Anaconda via the Command Prompt
- Be sure to active the environment, then type `conda install <name here>` or `pip install <name here>`

Installation

- Start coding in Python!



The screenshot shows a PyCharm IDE window titled "test1 - [C:\Users\Steve\PycharmProjects\test1] - C:\Users\Steve\PycharmProjects\Gradient.py - PyCharm Communi...". The window displays a Python script named "Gradient.py" with the following code:

```
1  # Steve Mitchell
2  # May 2017
3
4  import argparse
5  import cv2
6  import imutils
7
8  ap = argparse.ArgumentParser()
9  ap.add_argument("-i", "--image", required=True, help="Path to the image")
10 args = vars(ap.parse_args())
11
12 image = cv2.imread("golfballs.jpg")
13 cv2.imshow("Original", image)
14
15 gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
16 cv2.imshow("Gray", gray)
17
18 blurred = cv2.GaussianBlur(gray, (11,11), 0)
19 cv2.imshow("Blurred", blurred)
20
21 edged = cv2.Canny(blurred, 30, 150)
22 cv2.imshow("Edged", edged)
23
24 cnts = cv2.findContours(edged.copy(), cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_SIMPLE)[-2]
25 print "There are %d golf balls in this image" % (len(cnts))
26
27 golf = image.copy()
28 cv2.drawContours(golf, cnts, -1, (0, 0, 255), 2)
29 cv2.imshow("Golf Balls", golf)
30
31 cv2.waitKey()
32
33
34
```

The status bar at the bottom indicates "PEP 8: block comment should start with '#'" and "38:1 CRLF+ UTF-8+".

References

- *Anaconda*
 - <https://www.continuum.io/Anaconda-Overview>
- *PyCharm*
 - <https://www.jetbrains.com/pycharm/>
- *Getting started with python through Anaconda and PyCharm: Installation 1 / 2*
 - <https://www.youtube.com/watch?v=y-B2sybfX80>
- *Getting started with python through Anaconda and PyCharm: Installation 2 / 2*
 - https://www.youtube.com/watch?v=nuFpkBc_5Ks
- A complete tutorial to learn data science with Python from scratch
 - <https://www.analyticsvidhya.com/blog/2016/01/complete-tutorial-learn-data-science-python-scratch-2/>
- Ultimate guide for data exploration in Python using NumPy, Matplotlib, and Pandas
 - <https://www.analyticsvidhya.com/blog/2015/04/comprehensive-guide-data-exploration-sas-using-python-numpy-scipy-matplotlib-pandas/>