Installation Guide for Anaconda and PyCharm

About

This guide instructs you on how to install the **open source Anaconda Python 3.x distribution** and **PyCharm** programming language and IDE on your own personal computer. It is NOT meant to be a troubleshooting resource for installation problems.

Warning: Proceed At Your Own Risk!

Before you install anything to your own systems, please be aware of the following:

(a) We (the course instructors and TAs) understand that having lab software on your own personal computer is useful. However, for this course, you are not required to install anything on your home computer.

(b) We have provided all the software you need on the lab machines, which are available to you 7 days a week, 24 hours a day.

(c) Do not spend hours on this installation. Get your homework done first, then try this installation. We will not let you use installation problems as an excuse for not having your assignments done, because you have a laboratory fully prepared to let you work.

(d) If you follow the steps perfectly, and if you do not already have software installed that conflicts with this software, the installation might be relatively easy. If you miss a step, or if you have software already installed that conflicts with this installation, it can be impossible to resolve any issues.

(e) We cannot support the installation of the software on your computer. If it does not work, we may not be able to help you.

It should be noted that while this instruction guide covers installation of software on your own machines, you should NOT attempt to install anything on the lab machines; everything you could need is already installed.

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1 Anaconda

Anaconda is an open source Python distribution developed by Continuum Analytics that is available for Windows, OS X, and Linux. It has convenient facilities for installing and managing packages. You need to make sure you install Anaconda for the version of Python utilized by your course. For CMPT 141, this is Python 3.x.

1.1 Download

As of the time of writing, Anaconda 4.1.1 and Python 3.5 are the latest versions of software available for download and the versions that will be covered in this section for all operating systems.

(a) Open a web browser and navigate to the official Anaconda download page:

`https://www.anaconda.com/download/`

(b) Based on your operating system and computer's bit architecture, click on the appropriate graphical installer download link for Python 3.5. If a graphical installer is not available (case of Linux), then click on the download link that is available (should only differ by bit architecture).

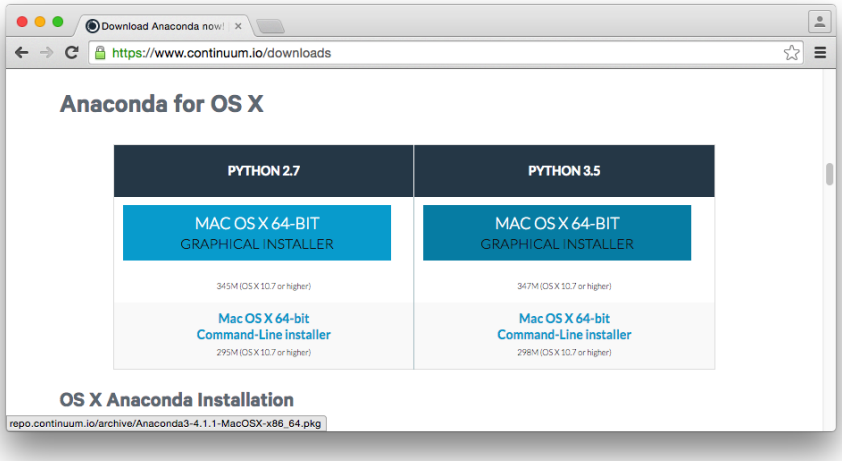

Figure 1: The Anaconda download page. The dark blue box labelled "MAC OS X 64-BIT GRAPHICAL INSTALLER" is the download link for Python 3.5 on a OS X 64-bit architecture.

(c) In the dialog window, navigate to the location you want to save the EXE file (Windows), PKG file (OS X), or SH file (Linux) and click "Save". The file has the following naming scheme:

`Anaconda3-4.1.1-<os>-<architecture>.<file_extension>`

where bracketed portions are replaced with the appropriate values. For example, the default filename for the Windows 32-bit installer would be `Anaconda-4.1.1-Windows-x86.exe`.

(d) Wait for Anaconda to finish downloading.

Once your download is complete, you can install Anaconda.

1.2 Installation

Skip to the section that cover's your computer's operating system for a detailed walkthrough. While Windows and OS X have a similar guided installation process, Linux is different due to its installer file being a script as opposed to an executable.

1.2.1 Windows

(a) In your file explorer, navigate to the location where you saved the Anaconda EXE file from Section 1.1.

(b) Double Click on the EXE file.

(c) If a security warning window pops up asking for permission to open the file, click "Run".

(d) A window with a progress bar should pop-up telling you to wait for the installer to load.

(e) Once the installer is ready, the Anaconda setup window should appear. Click "Next >" to proceed.

(f) Read the Software License Agreement, then click "I Agree" to agree to the terms.

(g) Select "Just Me" to install Anaconda for your account only, then click "Next >".

(h) Change the "Destination Folder" if need be (this is where Anaconda will be installed to on your hard drive). The default location should be fine.

(i) Check to make sure you have enough free space on your hard drive and more for Anaconda and additional packages. If you do not have sufficient storage available, cancel the installation, clear up some hard drive space, and restart the installation.

(j) Click "Next >".

(k) Check both options "Add Anaconda to my PATH environment variable" and "Register Anaconda as my default Python 3.5" if they are not already checked.

(l) Click "Install" to begin installation of Anaconda.

(m) Wait for Anaconda to install (this may take a while). Once it is done installing, click "Next >".

(n) Uncheck "Learn more about Anaconda Cloud" (unless you are curious about it). Click "Finish".

1.2.2 OS X

(a) In your file explorer, navigate to the location where you saved the Anaconda PKG file from Section 1.1.

(b) Double Click on the PKG file to bring up the Anaconda installation window titled "Install Anaconda3".

(c) For the "Introduction" step, click on "Continue".

(d) For the "Read Me" step, read the Important Information, then click on "Continue".

(e) For the "License" step, read the Software License Agreement, the click "Continue". A prompt will pop up saying that you must agree to the Terms of the Software License Agreement. Click "Agree".

(f) For the "Installation Type" step:

  i) Check to make sure you have enough free space on your hard drive and more for Anaconda and additional packages.

  ii) If you want to change whether the program is installed for just you or everyone on your computer, click on "Change Install Location..." to bring up the Select a Destination submenu, select your choice, then click "Continue" to go back to the step's menu.

  iii) Click "Install" to install Anaconda.

(g) For "Installation", wait for Anaconda to install (this may take a while).

(h) For Summary, read the post-installation details, then click the blue "Close" button when you are done.

1.2.3 Linux

(a) Open "Terminal" (or your favourite console program)

(b) Change to the directory containing the SH file you downloaded from Section 1.1 (e.g. If you saved the sh file to `/home/abc123`, then used `cd` to enter the command "`cd /home/abc123`").

(c) Enter the command "`bash <name-of-SH-file>`" where `<name-of-SH-file>` is replaced with the name of the file referred to in the previous bulletpoint (e.g. `bash Anaconda3-4.1.1-Linux-x86.sh`).

(d) Press the `ENTER` key to continue.

(e) Read through the license (press the `ENTER` key to advance a line and/or the `Q` key to skip to the end).

(f) Type `yes` into the prompt and press the `ENTER` key.

(g) Press the `ENTER` key to install Anaconda into the default location specified (may be your a subfolder in your home directory).

(h) Wait for Anaconda and its default packages to install (this may take a while).

(i) Type `yes` to prepend the Anaconda installation location to your PATH. This enables you to start Anaconda regardless of your current directory in the console.

1.3 Test Installation

It is important to make sure Anaconda was installed correctly by running a simple Python test program (e.g. "Hello World" equivalent). Open up a terminal (see Section 1.4) and enter `python`. This should start Python's interactive mode from within the console. Enter `print("Hello Earthling")` into the prompt and it should print `Hello Earthling` as output on a new line. Type `exit()` or press `CTRL + D` to close Python.

```
Python 3.5.2 |Anaconda 4.1.1 (32-bit)| (default, Jul  5 2016, 11:45:57)
[MSC v.1900 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello Earthling")
Hello Earthling
```

Listing 1: Successful run of Python which prints "Hello Earthling" to the console.

1.4 Package Management

Package management is done via console commands, so open a console program (also known as a terminal) to perform the following steps. For Windows 7, 8, and 10, the default console program is Command Prompt. For Mac, the default console program is Terminal. For Linux, you have already been using a console to this point, so continue to use that.

For instructions on downloading and installing new packages, i.e. packages not yet installed on your computer, see "Install Packages". For instructions on downloading updates to existing packages, i.e. newer versions of packages already installed on your computer, see "Update Packages".

1.4.1 View Package Listings

Enter `conda list` in your terminal to bring up the *list of packages currently installed* on your computer. It also lists their version numbers.

Open a web browser and go to `http://docs.anaconda.com/anaconda/packages/pkg-docs/` to see a table of *all packages available for download* through Anaconda's package manager (make sure the Python 3.5 tab is selected).

1.4.2 Install Packages

(a) Enter the following command:

```
conda install <packagename>
```

where `<packagename>` is the name of the package you want to install.

(b) The console will present a list of dependent packages to be installed/updated as well. Enter `y` to agree to install your package and its dependents.

(c) Wait for Anaconda to download and install all the packages. Your package and its dependents should be successfully installed upon completion.

1.4.3 Update Packages

(a) Enter the following command:

```
conda update <packagename>
```

where `<packagename>` is the name of the package you want to update.

(b) The console may present a list of dependent packages to be installed/updated as well. Enter `y` to agree to update/install your package and its dependents.

(c) Wait for Anaconda to download and install all the package updates. Your package and its dependents should be successfully updated upon completion.

1.4.4 Required Packages

For CMPT 141, you need to install and/or update the following packages to meet or exceed the following version numbers:

Package Name	Minimum Version Number
`numpy`	1.11
`scipy`	0.18
`matplotlib`	1.5
`pillow`	3.3
`scikit-image`	0.12

2 PyCharm

PyCharm is a proprietary Python IDE developed by JetBrains that is available for Windows, OS X, and Linux. It is available as "Professional" and "Community" versions and requires a registered account and license to use. We will instruct you on how to sign up to JetBrains for an academic license and how to install the "Professional" version on your computer.

Note that there is a PyCharm Edu IDE offered by JetBrains. PyCharm Edu is an open source Python IDE free to use for educational purposes. You may use this version of PyCharm if allowed by your course instructor, though the guide will not cover PyCharm Edu in any form.

2.1 Registration

As mentioned, use of PyCharm "Professional" Edition requires a registered JetBrains account in order to acquire a free Student License. There is no registration fee. This license allows students to use JetBrains' entire suite of professional development tools (including PyCharm) for one year with the option to renew.

(a) Open a web browser and navigate to (the link below is clickable):

`https://www.jetbrains.com/shop/eform/students`

(b) Fill out the form, indicating that you are a student with a university email address, and click "Apply for Free Products".

(c) You will receive an email from Jetbrains, confirming your intention to create an account by clicking on a link to verify your email address.

(d) After completing the previous step you will receive another email confirming the creation of your account and asking you to follow a link to another page containing the terms and conditions. Once you accept the terms and conditions on that web page, the license will be added to your jetbrains account, and you are ready to proceed to Step 2.2. You will use your new Jetbrains account later in Step 2.5 to activate your software.

2.2 Download

(a) Open a web browser and navigate to:

`https://www.jetbrains.com/pycharm/download/`

(b) Click on the Professional "Download" link for your operating system.

(c) In the dialog window, navigate to the location you want to save the EXE file (Windows), DMG file (OS X), or TAR.GZ file (Linux) and click "Save". The file has the following naming scheme:

`pycharm-professional-2016.2.1.<file_extension>`

where `.<file_extension>` is replaced with the appropriate value.

(d) Wait for PyCharm to finish downloading.

Once your download is complete, you can install PyCharm.

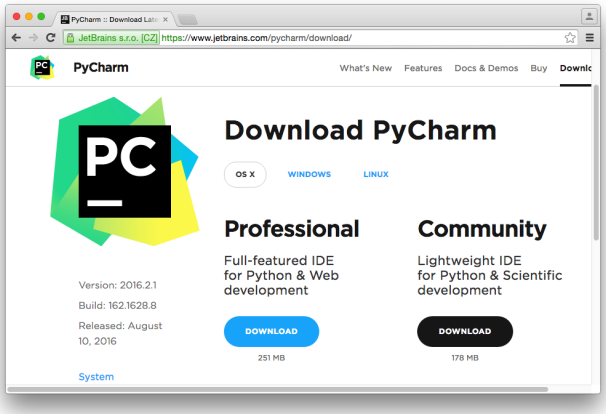

Figure 2: The PyCharm download page. The blue button labelled "DOWNLOAD" is the download link for PyCharm 2016.2.1 on OS X.

2.3 Installation

Skip to the section that cover's your computer's operating system for a detailed walkthrough.

2.3.1 Windows

(a) In your file explorer, navigate to the location where you saved the PyCharm EXE file from Section 2.2.

(b) Double-click on the EXE file.

(c) If a security warning window pops up asking for permission to open the file, click "Run".

(d) A window with a progress bar should pop-up telling you to wait for the installer to load.

(e) If a User Account Control window pops up requesting permission for PyCharm to be able to make changes on the hard drive, click "Yes".

(f) Once the installer is ready, the PyCharm setup window should appear. Click "Next >" to proceed.

(g) Change the "Destination Folder" if need be (this is where PyCharm will be installed to on your hard drive). The default location should be fine.

(h) Check to make sure you have enough free space on your hard drive and more for PyCharm. If you do not have sufficient storage available, cancel the installation, clear up some hard drive space, and restart the installation.

(i) Click "Next >".

(j) Check "Create associations" > ".py" so that double-clicking on .py files will open them up in PyCharm.

(k) Optionally check "Create Desktop shortcut" > "... launcher" if you want to create an icon on the desktop that loads PyCharm ("..."may say "32-bit" or "64-bit" depending on your operating system's architecture).

(l) Click "Next >".

(m) The default option "JetBrains" for "Choose Start Menu Folder" is okay. Click "Install" to install PyCharm.

(n) Wait for PyCharm to install (this may take a while).

(o) Click "Finish".

2.3.2 OS X

(a) In your file explorer, navigate to the location where you saved the PyCharm DMG file from Section 2.2.

(b) Double-click on the DMG file to bring up a window titled "PyCharm".

(c) Click and drag the PyCharm.app icon in the window onto the Applications folder icon within the same window.

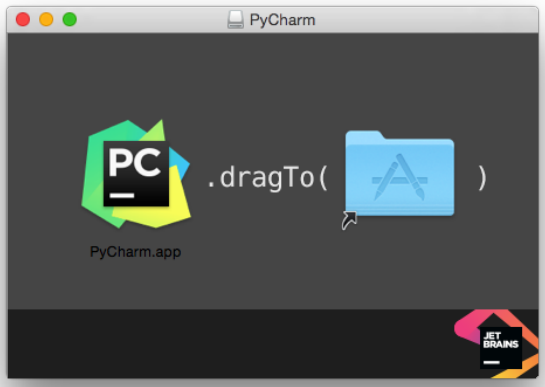

Figure 3: The "PyCharm" installation window. Click and drag the PyCharm icon onto the Applications folder icon.

(d) Close the "PyCharm" window.

2.3.3 Linux

(a) In your file explorer, navigate to the location where you saved the PyCharm TAR.GZ file from Section 2.2.

(b) Double-click on the TAR.GZ file to open your Linux distribution's archive manager. If double-clicking extracts the file, you may skip to step (d).

(c) Click "Extract" or whichever mechanism exists in your archive program to unzip/extract the contents of the archive file to the directory of your choice.

(d) Once extraction has been completed, close your archive manager (if it hasn't been closed yet) and you'll find a folder named "`pycharm-2016.2.1`" in the directory specified in the previous step.

2.4 Missing JRE Requirement

If PyCharm can not find a valid Java Runtime Environment (JRE) on launch, it will display an appropriate error message. *You must have a valid JRE installed to run PyCharm*. We won't explain how to install that requirement here, but you can acquire a compatible version (JRE 1.8 or higher) from an official JRE source on the internet, your Linux distribution's package manager, or terminal commands. Normally, JRE will be bundled with PyCharm so this should not be an issue.

2.5 First Time Launch

If you are launching PyCharm for the first time, you will encounter some pop-ups that you need to address:

(a) Click "I do not have a previous version of PyCharm or I do not want to import my settings." and click "OK".

(b) Read and accept the terms of use for PyCharm.

(c) For the license activation window, select "Activate". Select "Activate license with:" > "JetBrains Account". Enter your usask e-mail address and password from Section 2.1 and click "Activate".

(d) After the PyCharm splash window, you will be presented with a "PyCharm Initial Configuration" window. Click "OK".

2.6 Test Installation

It is important to make sure PyCharm was installed correctly by running a simple Python test program (e.g. "Hello World" equivalent). Run PyCharm. Create a new project (see the "Project Setup Guide for PyCharm") and enter `print("Hello Earthling")` into the "Python Console" prompt (click "View" > "Tool Windows" > "Python Console" if you do not see the subwindow in PyCharm). It should print `Hello Earthling` as output on a new line within the console. The console output should look similar to Listing 1.