



Introduction to Anaconda

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What is Anaconda?

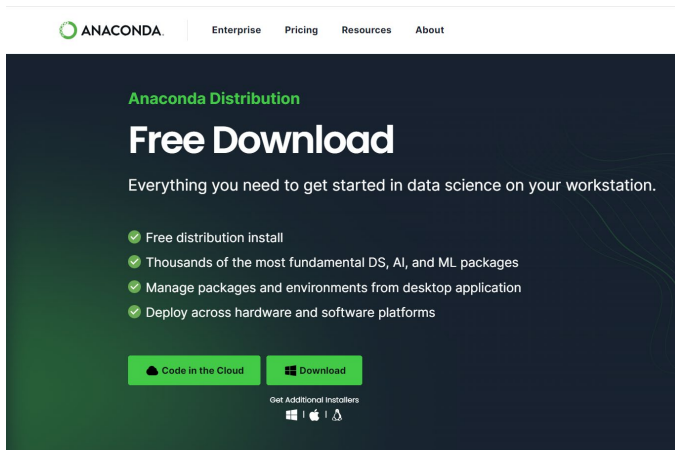
Anaconda is a Python distribution that is popular for data analysis and scientific computing.

- Available for Windows, Mac OS X and Linux.
- Included many popular packages: Numpy, SciPy, Matplotlib, Pandas, IPython, Cython.
- Includes Spyder, a Python development environment.
- Includes conda, a platform-independent package manager.

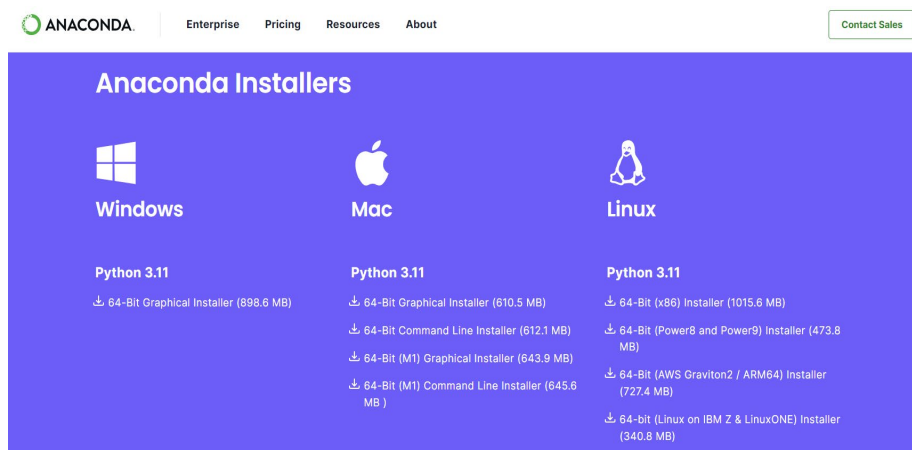
Install Anaconda

Anaconda is easy to install

- Download installer from <https://www.anaconda.com/download>.
- Execute the installer and follow the instructions.



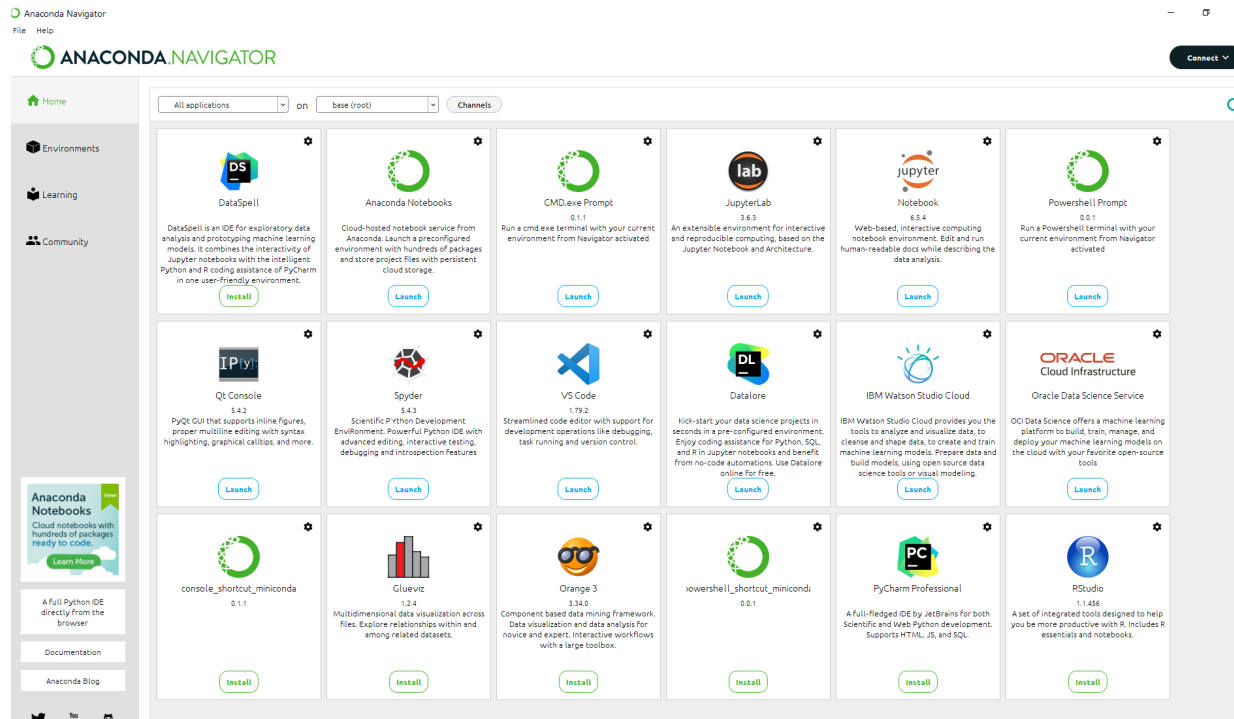
The screenshot shows the Anaconda website homepage. At the top, there is a navigation bar with the Anaconda logo and links for Enterprise, Pricing, Resources, and About. The main content area has a dark background with the text "Anaconda Distribution" in green, followed by "Free Download" in large white letters. Below this, a subtitle reads "Everything you need to get started in data science on your workstation." There are four bullet points with green checkmarks: "Free distribution install", "Thousands of the most fundamental DS, AI, and ML packages", "Manage packages and environments from desktop application", and "Deploy across hardware and software platforms". At the bottom, there are two buttons: "Code in the Cloud" and "Download". Below the "Download" button, it says "Get Additional Installers" with icons for Windows, Mac, and Linux.



The screenshot shows the "Anaconda Installers" page. It has a blue background and a navigation bar at the top with the Anaconda logo and links for Enterprise, Pricing, Resources, and About. On the right side of the navigation bar is a "Contact Sales" button. The main content area is divided into three columns for Windows, Mac, and Linux. Each column has a platform icon at the top, followed by the text "Python 3.11". Below this, there are links to download installers with their respective sizes in parentheses. For Windows, there is a "64-Bit Graphical Installer (898.6 MB)". For Mac, there are three options: "64-Bit Graphical Installer (610.5 MB)", "64-Bit Command Line Installer (612.1 MB)", and "64-Bit (M1) Graphical Installer (643.9 MB)". For Linux, there are four options: "64-Bit (x86) Installer (1015.6 MB)", "64-Bit (Power8 and Power9) Installer (473.8 MB)", "64-Bit (AWS Graviton2 / ARM64) Installer (727.4 MB)", and "64-bit (Linux on IBM Z & LinuxONE) Installer (340.8 MB)".

Install Anaconda

After the installation is complete, you will see



Introduction to Conda

Simplifies installation of Python packages

- Platform-independent package manager.
- Provides “virtual environment” capabilities.

conda

≈

pip

+

virtualenv

(python package manager)

(virtual environment manager)

Install Python Packages

Install a package:

- *conda install numpy*

Specific versions of packages can be requested:

- *conda install numpy=1.11*

List packages in current environment:

- *conda list*

Uninstall package:

- *conda uninstall numpy*

Create Virtual Environments

Why we create virtual environments?

- To resolve package conflicts

Create a virtual environment:

- *conda create --name your_env_name*
- *conda create --name your_env_name python=3.10*

Start and close a virtual environment:

- *(conda) activate your_env_name*
- *(conda) deactivate*

Virtual Environments for This Class

1. Create a virtual environment

conda create --name myML

2. Install ipykernel (Jupyter needs Ipython kernel)

conda install ipykernel

3. Add the virtual env as a jupyter kernel

python -m ipykernel install --name "myML"

4. Check if it is installed correctly

jupyter kernelspec list

Virtual Environments for This Class

5. Install dependent packages

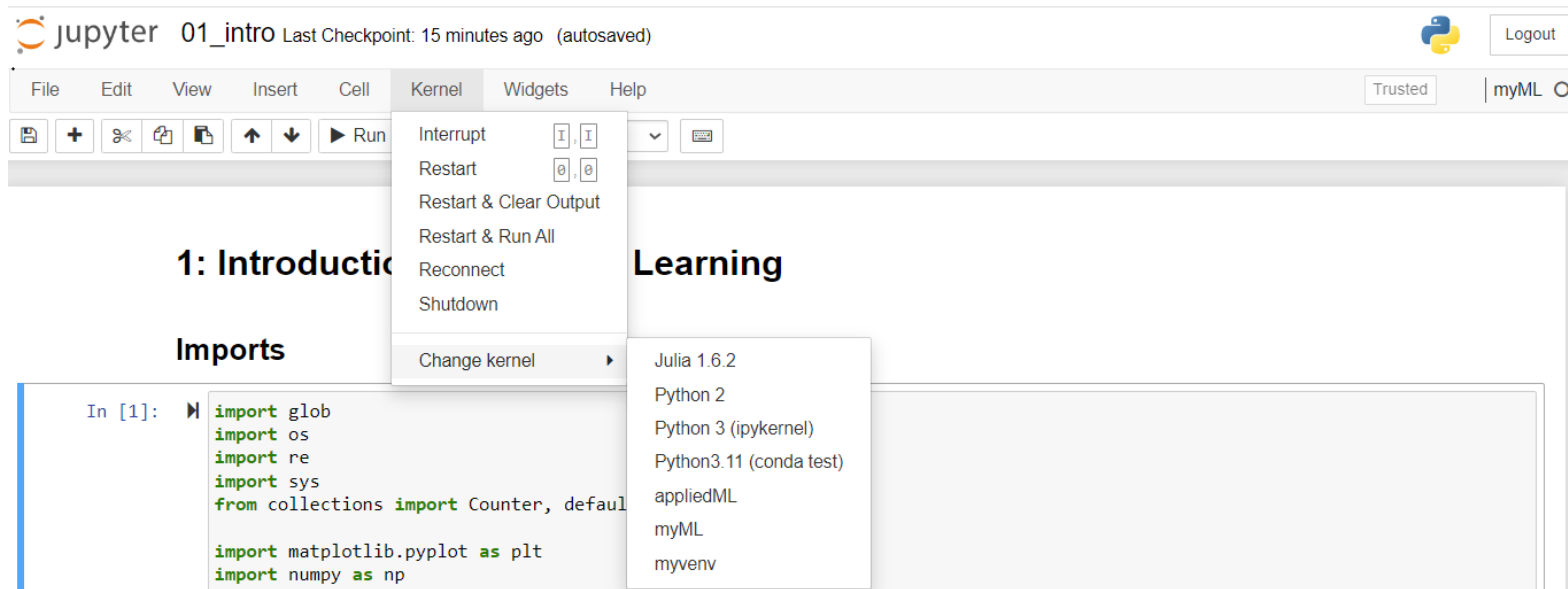
```
conda install -y numpy pandas matplotlib python-  
graphviz scikit-learn lightgbm py-xgboost pytorch torchvision  
pip install mglearn
```

6. Launch Jupyter Notebook

```
jupyter notebook
```

Virtual Environments for This Class

7. Change kernel in Jupyter Notebook



The screenshot shows the Jupyter Notebook interface for a notebook named '01_intro'. The 'Kernel' menu is open, displaying options: Interrupt, Restart, Restart & Clear Output, Restart & Run All, Reconnect, Shutdown, and Change kernel. The 'Change kernel' option is selected, showing a list of available kernels: Julia 1.6.2, Python 2, Python 3 (ipykernel), Python3.11 (conda test), appliedML, myML, and myvenv. The notebook content includes a title '1: Introduction to Learning', a section 'Imports', and a code cell with the following code:

```
In [1]: import glob
import os
import re
import sys
from collections import Counter, defaultdict

import matplotlib.pyplot as plt
import numpy as np
```

Virtual Environments for This Class

If you encounter the following issue during the installation of the package:

Issue:

```
DEBUG:urllib3.connectionpool:Starting new HTTPS connection (1): repo.anaconda.com:443  
DEBUG:urllib3.connectionpool:https://repo.anaconda.com:443 "GET /pkgs/main/win-64/current_repodata.json HTTP/1.1" 304 0
```

Solution:

```
conda install "conda-build!=3.26.0"
```