



MONASH
University

FIT 3181 Deep Learning

Install Software for FIT 3181: Deep Learning Unit

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Setup machines for the unit

- 1) [Install local machine \(manually\)](#)
 - 1) Install Anaconda
 - 2) Create environments
 - 3) Install Tensorflow and additional necessary packages
- 2) [Setup/Get familiar with Google Colab](#)

All steps to manually install local machine

- 1) Install **Anaconda** (You can install the latest version of anaconda already having Python 3.9)
- 2) Create **some environments** inside Anaconda
 - 1) For example: **tf2_cpu** (We are going to install TensorFlow 2.x for this environment).
 - 2) Note: To each environment, we can install a specific version of Python and Tensorflow as our expectation.
- 3) Install **TensorFlow** for each **environment**
 - 1) Install **TensorFlow 2.x** (e.g., Tensorflow 2.5.0) for **tf2_cpu**
- 4) Install additional **necessary packages** for each anaconda environment
 - 1) Jupyter lab (or jupyter notebook), scikit-learn, matplotlib, pandas
- 5) [Optional] Install **Visual Studio Code** (a popular source-code editor which has many useful features, e.g., [debugging](#), [syntax highlighting](#), [intelligent code completion](#))
- 6) [Optional] Install **PyCharm** (PyCharm is an integrated development environment used in computer programming, specifically for the Python language).

Please get them **ready** for our first tutorial.

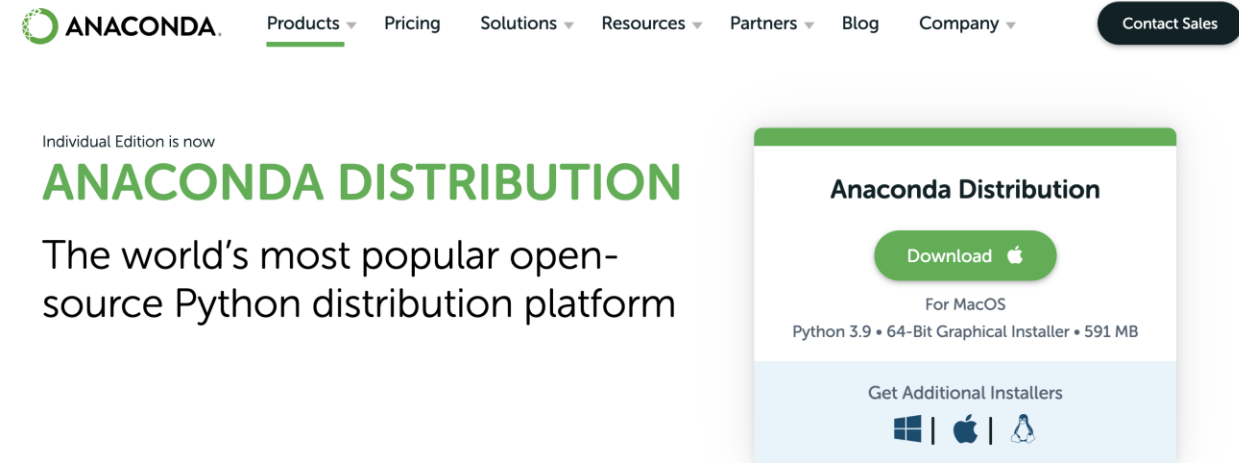
Uninstall Anaconda (only in case you want to have a fresh new Anaconda version)

- If you have had the **old version** of **Anaconda** already and want to uninstall for a **fresh new Anaconda installation** later.
 - Open **command line** and run
 1. `conda install anaconda-clean`
 2. `anaconda-clean`
- Another way is to
 - Navigate to the **Anaconda folder**, for example: `C:\Users\user_name\Anaconda3`
 - Run an **executable file** called: `Uninstall-Anaconda.exe`
 - Delete the folder `Anaconda3`

Install Anaconda and Python

- Go to the **Anaconda website**.
 - <https://www.anaconda.com/products/distribution>

- Choose the **package** you want to install for example:
 - **Windows** | Python 3.9 | 64-Bit Graphical Installer
 - **MacOS** | Python 3.9 | 64-Bit Graphical Installer
 - **Linux** | Python 3.9 | 64-Bit (x86) Installer



Anaconda Installers

Windows

Python 3.9

64-Bit Graphical Installer (594 MB)

32-Bit Graphical Installer (488 MB)

MacOS

Python 3.9

64-Bit Graphical Installer (591 MB)

64-Bit Command Line Installer (584 MB)

64-Bit (M1) Graphical Installer (316 MB)

64-Bit (M1) Command Line Installer (305 MB)

Linux

Python 3.9

64-Bit (x86) Installer (659 MB)

64-Bit (Power8 and Power9) Installer (367 MB)




64-Bit (AWS Graviton2 / ARM64) Installer (568 MB)

64-bit (Linux on IBM Z & LinuxONE) Installer (280 MB)

Install Anaconda and Python

- Further **instructions** to install Anaconda in **different operating systems**, refer to:
 - <https://docs.anaconda.com/anaconda/install/windows/> (this one is for Windows).
 - <https://docs.anaconda.com/anaconda/install/mac-os/> (this one is for Mac-OS).
 - <https://docs.anaconda.com/anaconda/install/linux/> (this one is for Linux/Ubuntu).

- After successfully install Anaconda, you can check the Anaconda **availability** and **version**.
 - Open **command line** and run
 - `conda list anaconda`
 - Update anaconda
 - `conda update conda`
 - `conda update anaconda`

Anaconda Installers		
Windows 	MacOS 	Linux 
Python 3.8 64-Bit Graphical Installer (477 MB) 32-Bit Graphical Installer (409 MB)	Python 3.8 64-Bit Graphical Installer (440 MB) 64-Bit Command Line Installer (433 MB)	Python 3.8 64-Bit (x86) Installer (544 MB) 64-Bit (Power8 and Power9) Installer (285 MB) 64-Bit (AWS Graviton2 / ARM64) Installer (413 M) 64-bit (Linux on IBM Z & LinuxONE) Installer (292 M)

```
(base) osboxes@osboxes:~/Downloads$ conda list anaconda$
# packages in environment at /home/osboxes/anaconda3:
#
# Name                  Version           Build    Channel
anaconda                2021.05          py38_0
```

*Example in Linux/Ubuntu (with older version)
as in Windows and MacOS*

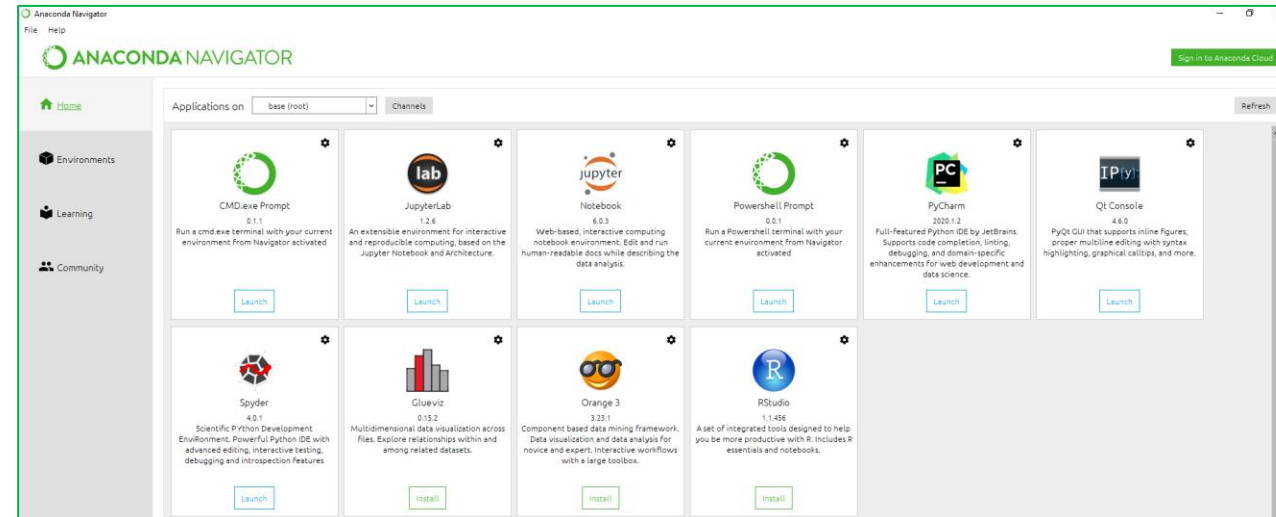
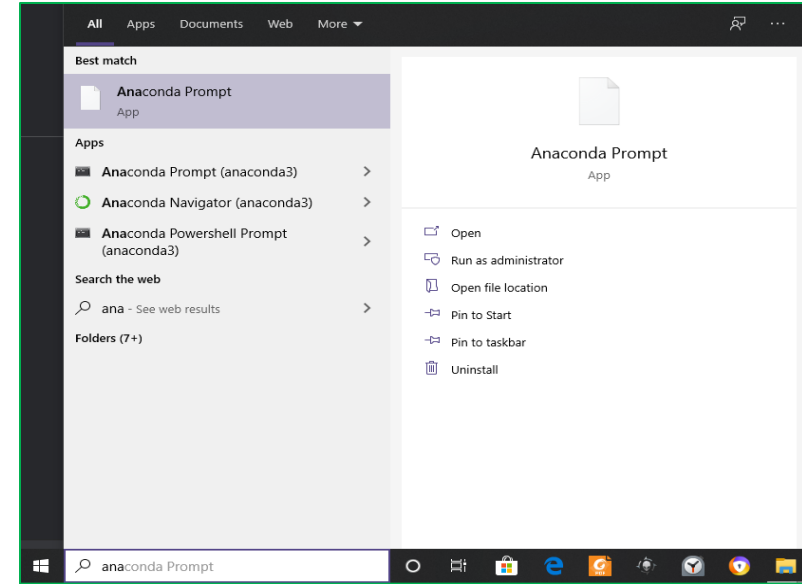
Anaconda Navigator

- Launch **Anaconda Navigator** (from Start Menu on Windows or Spotlight Search in MacOS).
- Or in the **command line** we can run the statement **anaconda-navigator** to open the Anaconda Navigator.

```
(base) osboxes@osboxes:~$ anaconda-navigator
```

Example in Linux/Ubuntu as in Windows and MacOS

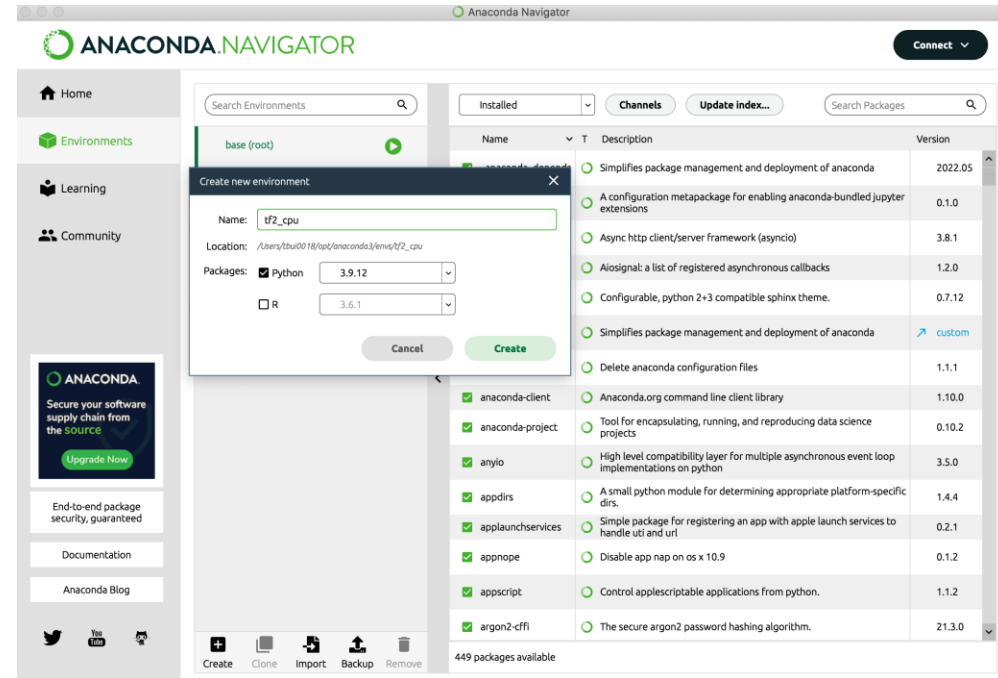
- Here it is. You will have **an default environment** named **base (root)** with some **applications/packages installed already** for this environment.



Create New Environments with Anaconda Navigator

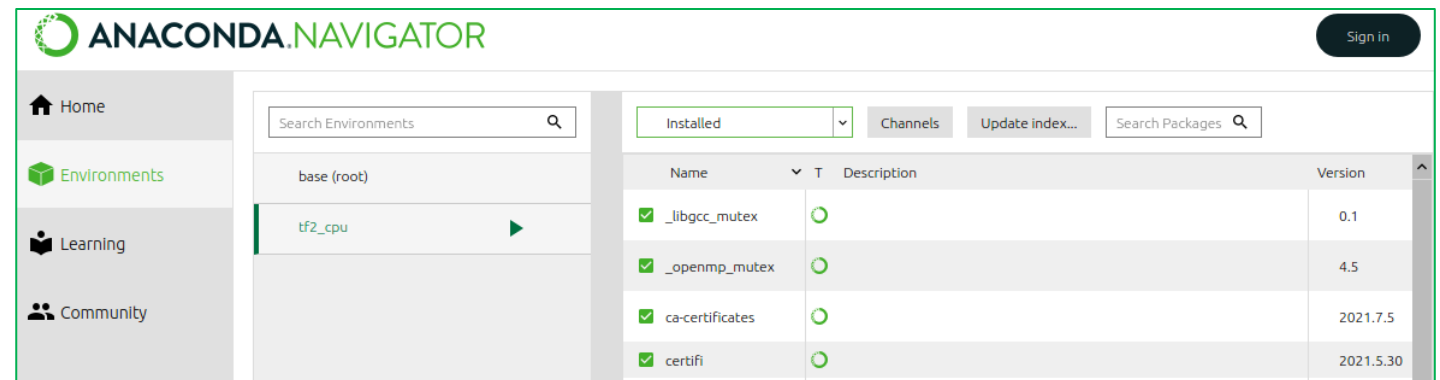
□ Click on **Environments** and choose **Create**

- Declare an environment named, e.g., **tf2_cpu**
- Choose the python version, e.g., 3.9



□ You now have the **environment tf2_cpu** with some **installed packages** inside for example:

- **pip, python, etc.**



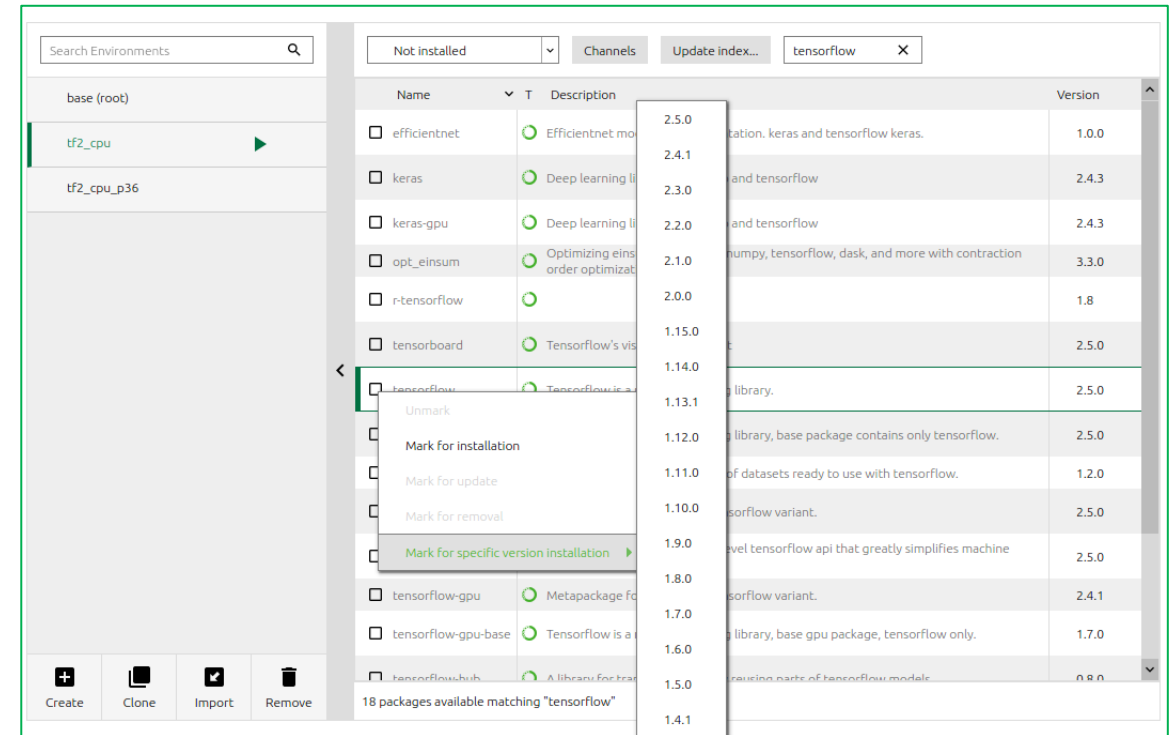
Create New Environments using Command Line

- Instead of using Anaconda Navigator to install new environments, you can use command line.
- **1. Open the command line.**
- **2. Create a new environment with a specific version of python:** *conda create -n tf2_cpu_p[36 or 37 or 38] python=[3.6 or 3.7 or 3.8]*
 - **For example:** *conda create -n tf2_cpu_p36 python=3.6*
 - **For example:** *conda create -n tf2_cpu_p38 python=3.8*
- You now have the aforementioned environments with some **installed packages inside** for example:
 - *pip, python, etc.*

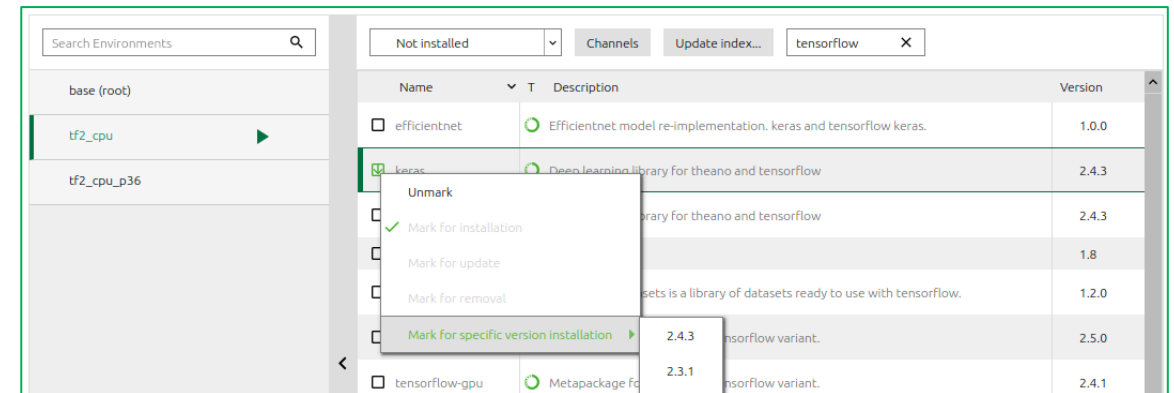
Install TensorFlow 2.x for the Environment using **Anaconda Navigator**

□ We now install **TensorFlow 2.x** for the environment **tf2_cpu**

- Click on **Update Index**
- Choose **Not installed** and search for **TensorFlow**
- Choose package **tensorflow** (right click) that you want to install and then click **Apply**
- This will install our desired version of Tensorflow (e.g., 2.5.0).



□ Similarly, you can also install **Keras** and **other packages**.



Install TensorFlow 2.x for the Environment using Command Line

- Instead of using Anaconda Navigator to install Tensorflow and other packages for one specific environment, you can use command line.
- **Open the command line.**
- Activate the environment that you want to install Tensorflow 2.x
 - `conda activate tf2_cpu_p38`
 - Install any version of tensorflow that you desire, for example: `pip install tensorflow==2.5.0`
- Similarly, you can also install **Keras and other packages.**
 - Using `pip install [package name]`
 - For example: `pip install keras`
 - **Note:** Remember to activate the environment before you install any new packages into it.

Verify TensorFlow and Keras Installed

□ Launch a **command line**.

- Activate the **tf2_cpu** environment.

Using: `conda activate tf2_cpu`

- Run Python and go to **Python** environment.

Using: `python`

- Check **TensorFlow**.

Using: `import tensorflow as tf`

- Check **Keras**.

Using: `import keras`

- **Ctrl Z** or type `exit()` to exit **Python**.

- Deactivate the **tf2_cpu** environment.

Using: `conda deactivate`

```
(base) osboxes@osboxes:~/Downloads$ conda activate tf2_cpu
(tf2_cpu) osboxes@osboxes:~/Downloads$ python
Python 3.8.10 (default, Jun  4 2021, 15:09:15)
[GCC 7.5.0] :: Anaconda, Inc. on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import tensorflow as tf
>>> import keras
>>> 
```

Example in Linux/Ubuntu as in Windows and MacOS

```
(base) osboxes@osboxes:~/Downloads$ conda activate tf2_cpu
(tf2_cpu) osboxes@osboxes:~/Downloads$ python
Python 3.8.10 (default, Jun  4 2021, 15:09:15)
[GCC 7.5.0] :: Anaconda, Inc. on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import tensorflow as tf
>>> import keras
>>> exit()
(tf2_cpu) osboxes@osboxes:~/Downloads$ conda deactivate
(base) osboxes@osboxes:~/Downloads$ 
```

Example in Linux/Ubuntu as in Windows and MacOS

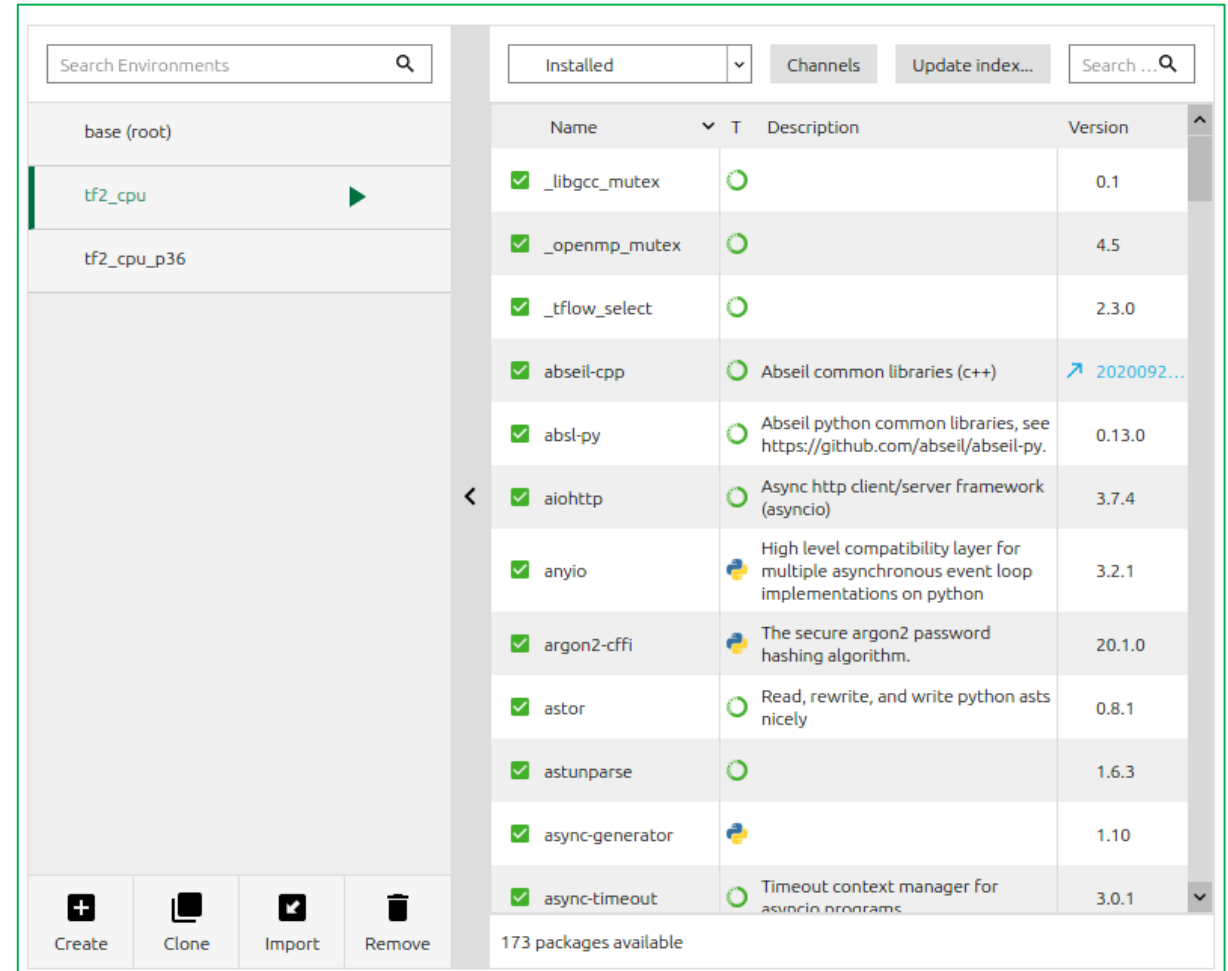
Install Additional Packages

- Now get back **Anaconda Navigator** and the **tf2_cpu** environment. We install some **necessary packages** and **applications**.

- Jupyter Notebook, Jupyter Lab
- Matplotlib
- Scikit-learn
- Pandas, etc

- We can also use command line to install additional packages using *pip install [package name]*

- For example: pip install scikit-learn*



Launch a Tutorial

- Open **command line** and navigate to the **folder** of the **tutorial material**.

- Activate your **environment**.

command line: `conda activate tf2_cpu`

- Open either **jupyter notebook** or **jupyter lab**.

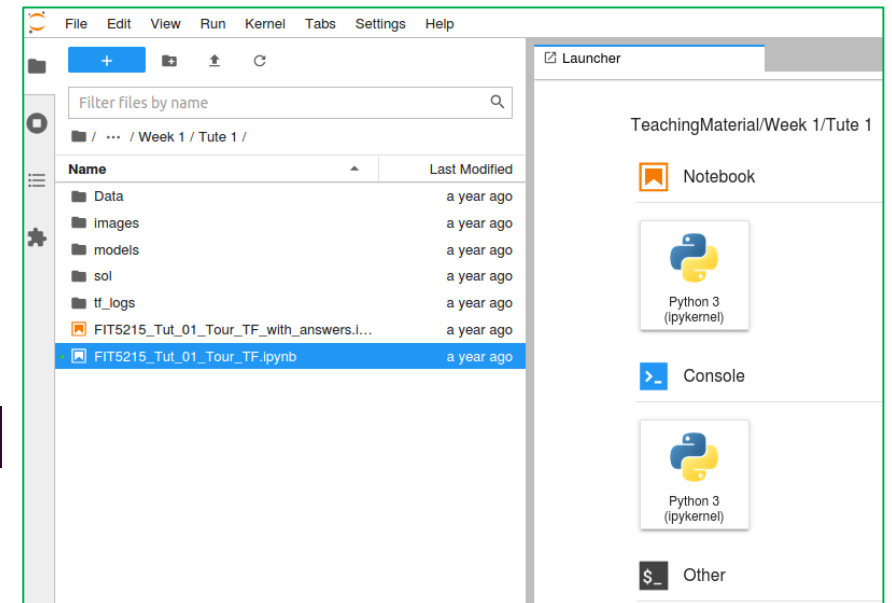
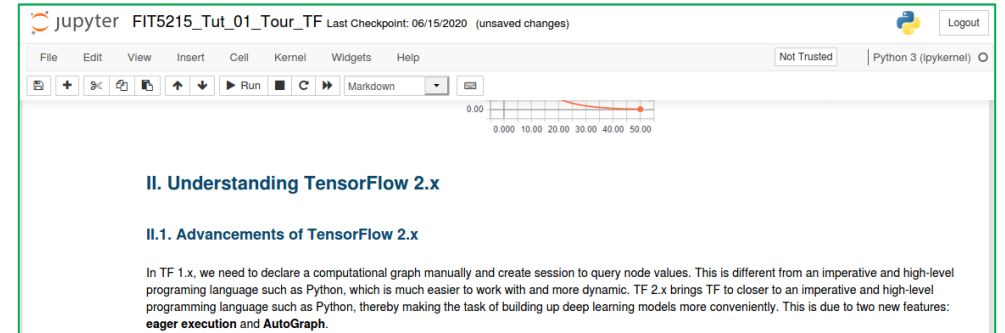
Command line: `jupyter notebook` (base) osboxes@osboxes:~/Downloads\$ conda activate tf2_cpu
(tf2_cpu) osboxes@osboxes:~/Downloads\$ jupyter notebook

Commandline : `jupyter lab`

Example in Linux/Ubuntu as in Windows and MacOS

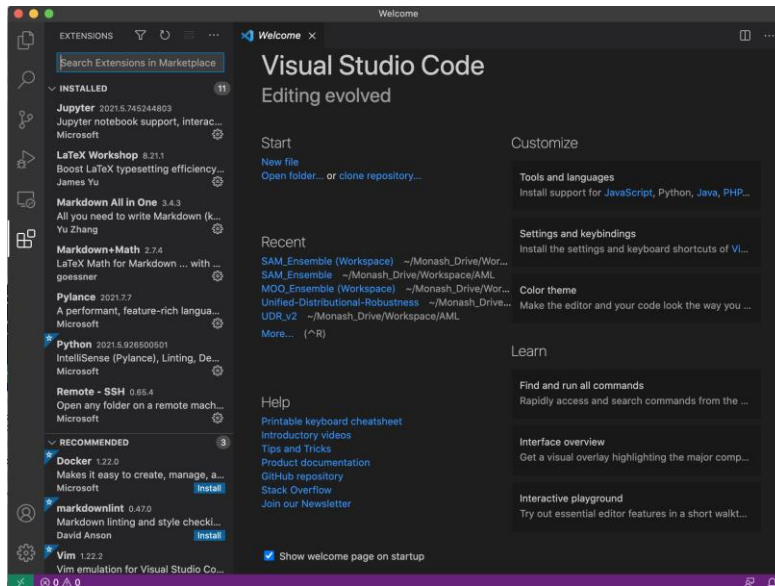
```
(base) osboxes@osboxes:~/Downloads$ conda activate tf2_cpu
(tf2_cpu) osboxes@osboxes:~/Downloads$ jupyter lab
```

Example in Linux/Ubuntu as in Windows and MacOS

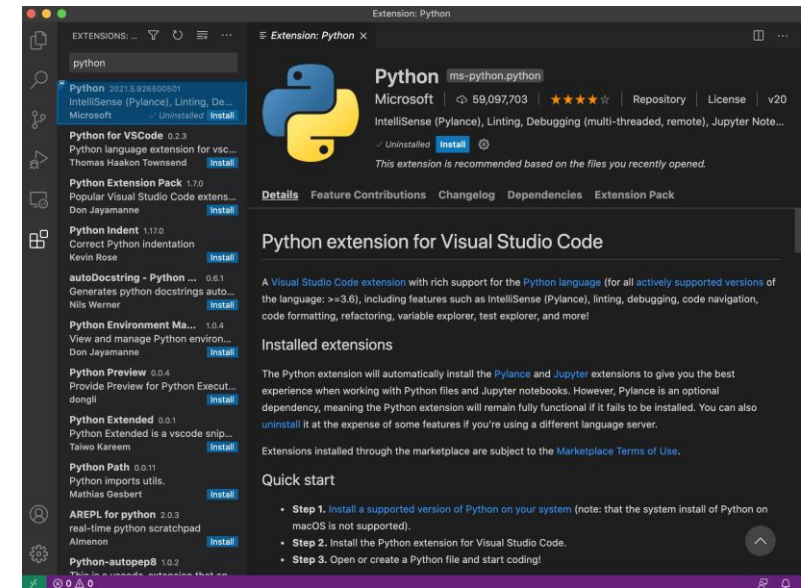


Install Visual Studio Code [optional]

- Go to the website <https://code.visualstudio.com/download> and download.
- Install necessary extensions (e.g., python, jupyter):



Click Extensions button in the menu bar

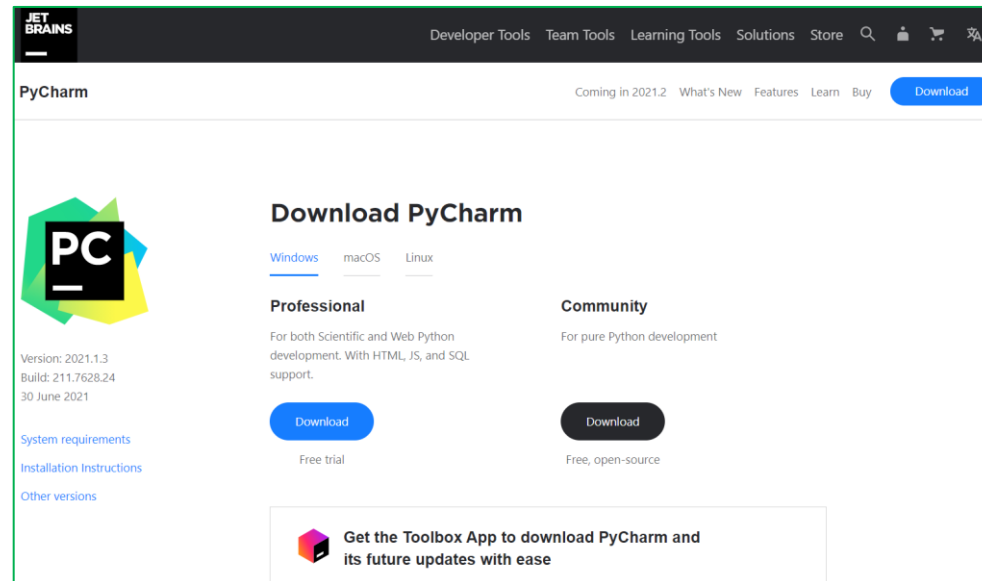
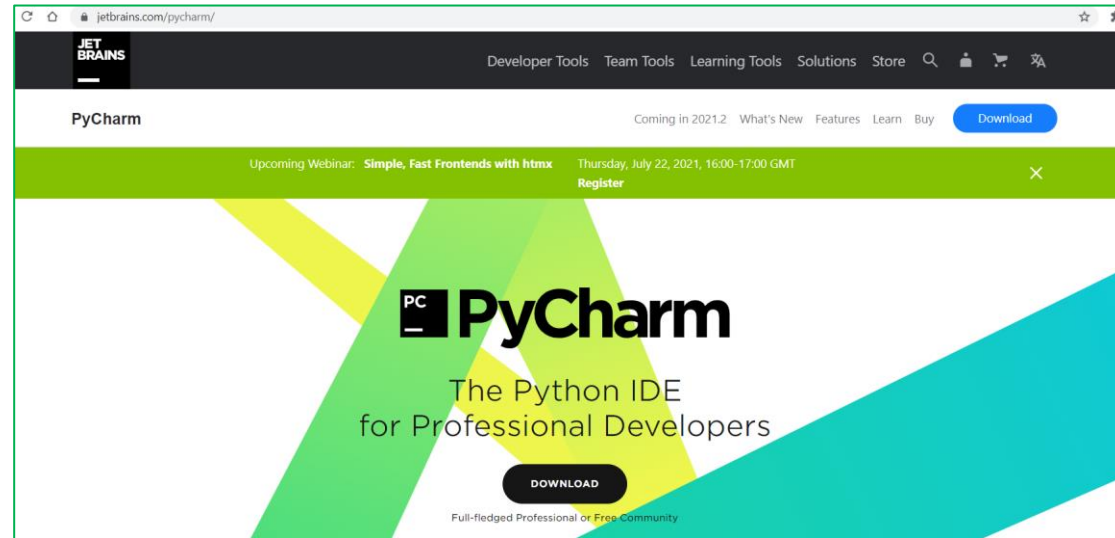


Search necessary extensions in the search bar
Then click install.

- Learn more about the UI:
<https://code.visualstudio.com/docs/getstarted/userinterface>

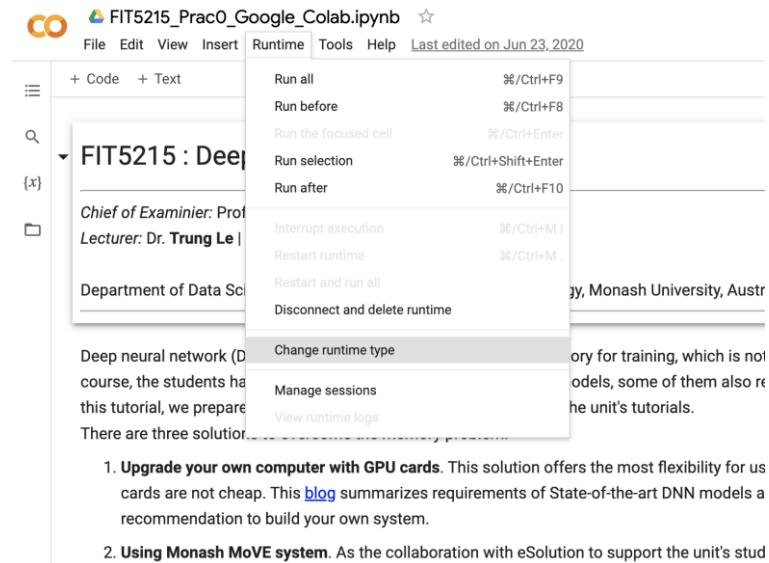
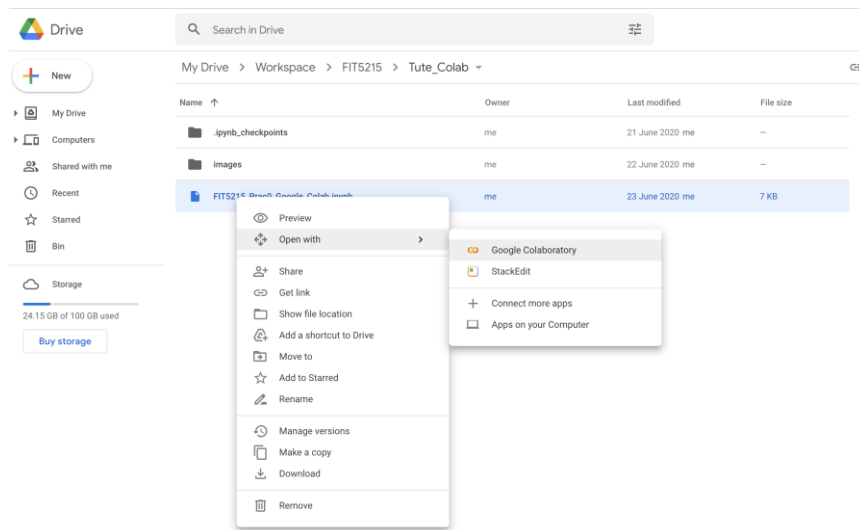
Install PyCharm [optional]

- Go to the website <https://www.jetbrains.com/pycharm/> and click the download button.
- Choose the **Community Edition** and download.
- Download and install.



How to use Google Colab

- ❑ Login to your Google Drive <https://drive.google.com/drive/my-drive>
- ❑ Navigate to the tutorial notebook file (.ipynb file extension) in your Drive
- ❑ Right click and chose Open with Google Colab
- ❑ Setup runtime (None, GPU or TPU)
 - ❑ The project will be reset if you change the Runtime type when training, therefore, remember to setup before start



Thanks for your attention!

Please get them ready for our first lab.