

Machine Learning Essentials (TTML5506-P) - Setup Guide (Windows)

Pre-Reqs:

- Windows OS
- Google Chrome (set as default browser)

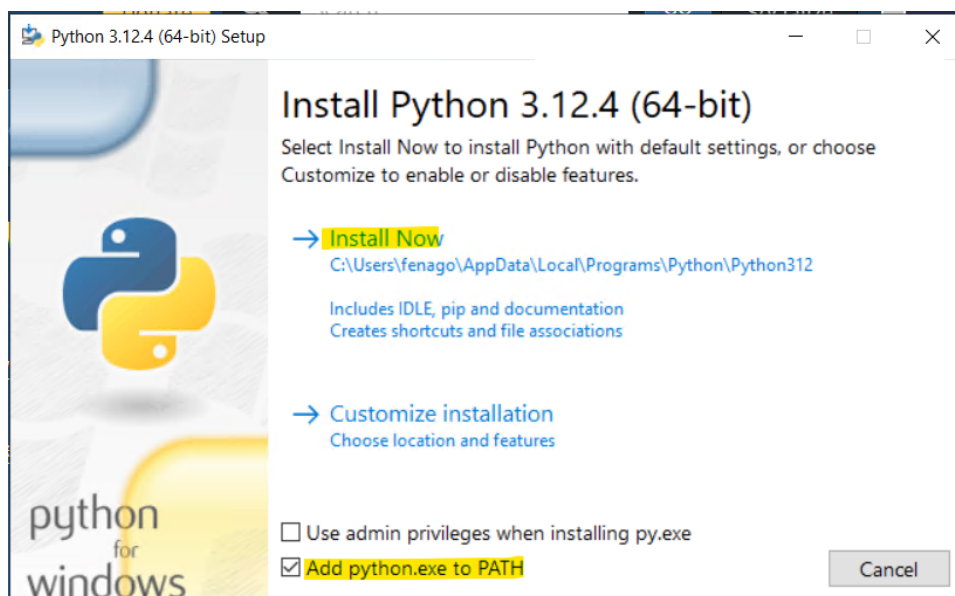
Step 1: Install Python

1. Download Python:

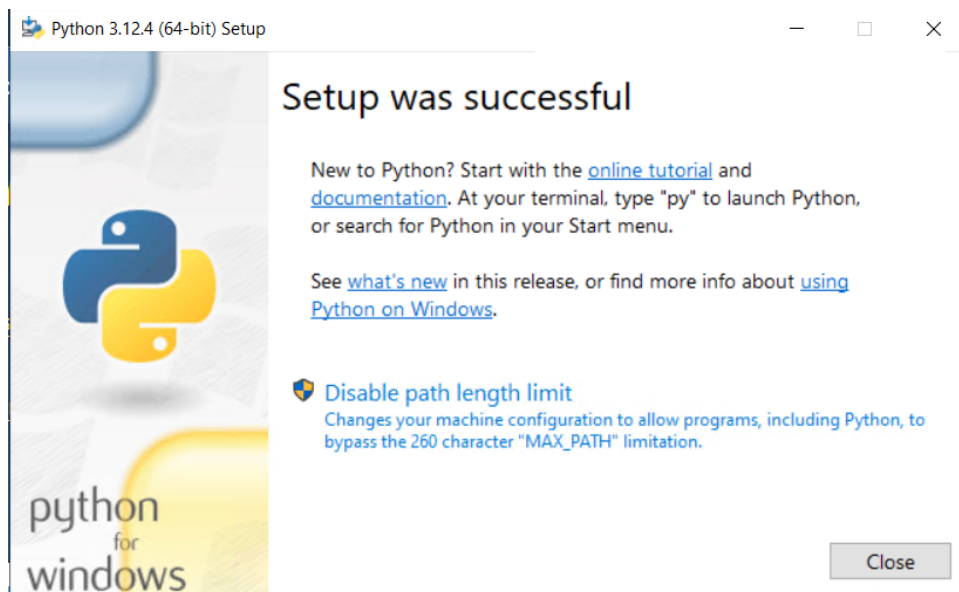
- Go to the official [Python website](https://www.python.org/).
- Download the latest version of Python.

2. Install Python:

- Run the downloaded installer.
- Check the box that says "Add Python to PATH".
- Click on "Install Now".



- Click on "Disable path length limit".



Step 2: Install pip (Python package installer)

Pip should be installed automatically with Python. You can verify by running the following command in Command Prompt:

```
python --version
```

```
pip --version
```

The image shows a Windows Command Prompt window titled "Administrator: Command Prompt". The window has a standard Windows title bar with minimize, maximize, and close buttons. The background is black with white text. The text in the window is as follows: "Microsoft Windows [Version 10.0.20348.2582]
(c) Microsoft Corporation. All rights reserved.
C:\Users\fenago>python --version
Python 3.12.4
C:\Users\fenago>pip --version
pip 24.0 from C:\Users\fenago\AppData\Local\Programs\Python\Python312\Lib\site-packages\pip (python 3.12)
C:\Users\fenago>".

Step 3: Install Jupyter Notebook

1. Open Command Prompt:

- Press `Win + R`, type `cmd`, and press `Enter`.

2. Install Jupyter:

- Run the following command:

```
pip install jupyterlab
```

Select Administrator: C:\Windows\system32\cmd.exe - pip install jupyterlab

```
C:\Users\fenago>pip install jupyterlab
Collecting jupyterlab
  Downloading jupyterlab-4.2.4-py3-none-any.whl.metadata (16 kB)
Collecting async-lru>=1.0.0 (from jupyterlab)
  Downloading async_lru-2.0.4-py3-none-any.whl.metadata (4.5 kB)
Collecting httpx>=0.25.0 (from jupyterlab)
  Downloading httpx-0.27.0-py3-none-any.whl.metadata (7.2 kB)
Collecting ipykernel>=6.5.0 (from jupyterlab)
  Downloading ipykernel-6.29.5-py3-none-any.whl.metadata (6.3 kB)
Collecting jinja2>=3.0.3 (from jupyterlab)
  Downloading jinja2-3.1.4-py3-none-any.whl.metadata (2.6 kB)
Collecting jupyter-core (from jupyterlab)
  Downloading jupyter_core-5.7.2-py3-none-any.whl.metadata (3.4 kB)
Collecting jupyter-lsp>=2.0.0 (from jupyterlab)
  Downloading jupyter_lsp-2.2.5-py3-none-any.whl.metadata (1.8 kB)
Collecting jupyter-server<3,>=2.4.0 (from jupyterlab)
  Downloading jupyter_server-2.14.2-py3-none-any.whl.metadata (8.4 kB)
Collecting jupyterlab-server<3,>=2.27.1 (from jupyterlab)
  Downloading jupyterlab_server-2.27.3-py3-none-any.whl.metadata (5.9 kB)
Collecting notebook-shim>=0.2 (from jupyterlab)
  Downloading notebook_shim-0.2.4-py3-none-any.whl.metadata (4.0 kB)
Collecting packaging (from jupyterlab)
  Downloading packaging-24.1-py3-none-any.whl.metadata (3.2 kB)
Collecting setuptools>=40.1.0 (from jupyterlab)
  Downloading setuptools-71.1.0-py3-none-any.whl.metadata (6.6 kB)
Collecting tornado>=6.2.0 (from jupyterlab)
  Downloading tornado-6.4.1-cp38-abi3-win_amd64.whl.metadata (2.6 kB)
Collecting traitlets (from jupyterlab)
  Downloading traitlets-5.14.3-py3-none-any.whl.metadata (10 kB)
```

Step 4: Install scikit-learn, pandas, and TensorFlow

1. Install scikit-learn:

- Run the following command in Command Prompt:

```
pip install scikit-learn
```

2. Install pandas & numpy:

- Run the following command in Command Prompt:

```
pip install pandas numpy
```

3. Install TensorFlow:

- Run the following command in Command Prompt:

```
pip install tensorflow
```

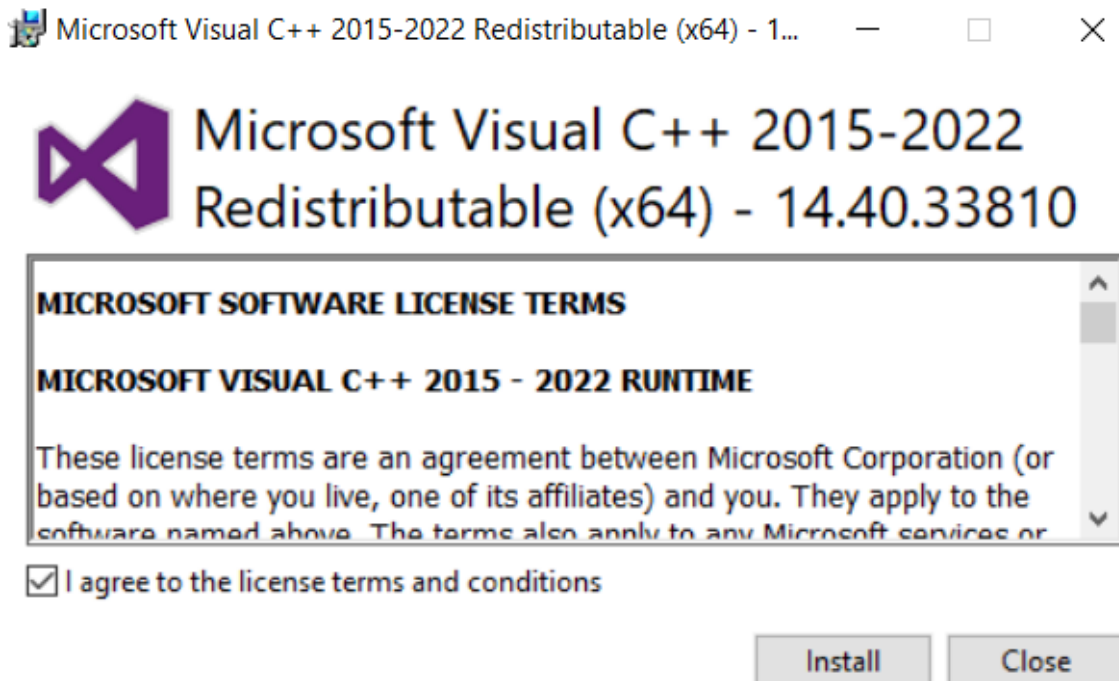
Step 5: Install Microsoft Visual C++ Redistributable

You can get download link from here:

<https://learn.microsoft.com/en-us/cpp/windows/latest-supported-vc-redist?view=msvc-170>

If you have "X64" Architecture, you can download this directly:

https://aka.ms/vs/17/release/vc_redist.x64.exe



Step 6: Verify Installation

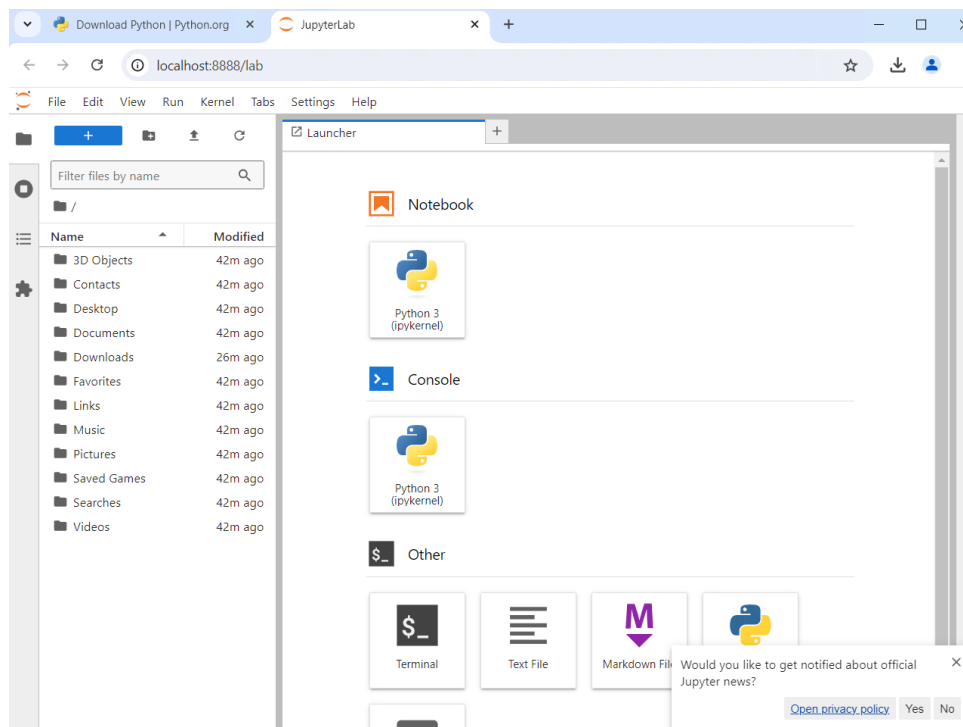
1. Launch Jupyter Lab:

- In Command Prompt, run:

```
jupyter lab
```

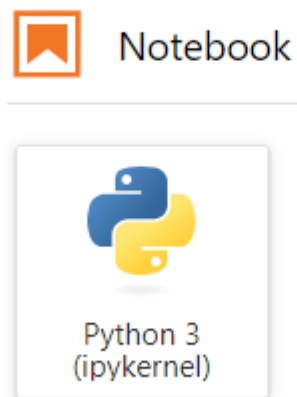
```
C:\Users\fenago>jupyter lab
[2024-07-28 19:57:02.221 ServerApp] jupyter_lsp | extension was successfully linked.
[2024-07-28 19:57:02.238 ServerApp] jupyter_server_terminals | extension was successfully linked.
[2024-07-28 19:57:02.238 ServerApp] jupyterlab | extension was successfully linked.
[2024-07-28 19:57:02.292 ServerApp] Writing Jupyter server cookie secret to C:\Users\fenago\AppData\Roaming\jupyter\runt
time\jupyter_cookie_secret
[2024-07-28 19:57:03.191 ServerApp] notebook_shim | extension was successfully linked.
[2024-07-28 19:57:03.238 ServerApp] notebook_shim | extension was successfully loaded.
[2024-07-28 19:57:03.238 ServerApp] jupyter_lsp | extension was successfully loaded.
[2024-07-28 19:57:03.238 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[2024-07-28 19:57:03.238 LabApp] JupyterLab extension loaded from C:\Users\fenago\AppData\Local\Programs\Python\Python312\Lib\site-packages\jupyterlab
[2024-07-28 19:57:03.238 LabApp] JupyterLab application directory is C:\Users\fenago\AppData\Local\Programs\Python\Python312\share\jupyter\lab
[2024-07-28 19:57:03.253 LabApp] Extension Manager is 'pypi'.
[2024-07-28 19:57:03.519 ServerApp] jupyterlab | extension was successfully loaded.
[2024-07-28 19:57:03.519 ServerApp] Serving notebooks from local directory: C:\Users\fenago
[2024-07-28 19:57:03.519 ServerApp] Jupyter Server 2.14.2 is running at:
[2024-07-28 19:57:03.519 ServerApp] http://localhost:8888/lab?token=60a195c593283894cdb0a60120ebc81d20d69dc6621441ed
[2024-07-28 19:57:03.519 ServerApp] http://127.0.0.1:8888/lab?token=60a195c593283894cdb0a60120ebc81d20d69dc6621441ed
[2024-07-28 19:57:03.519 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirm
ation).
```

- This will open Jupyter Lab in your default web browser.



2. Create a new Notebook:

- Click on "Python 3".



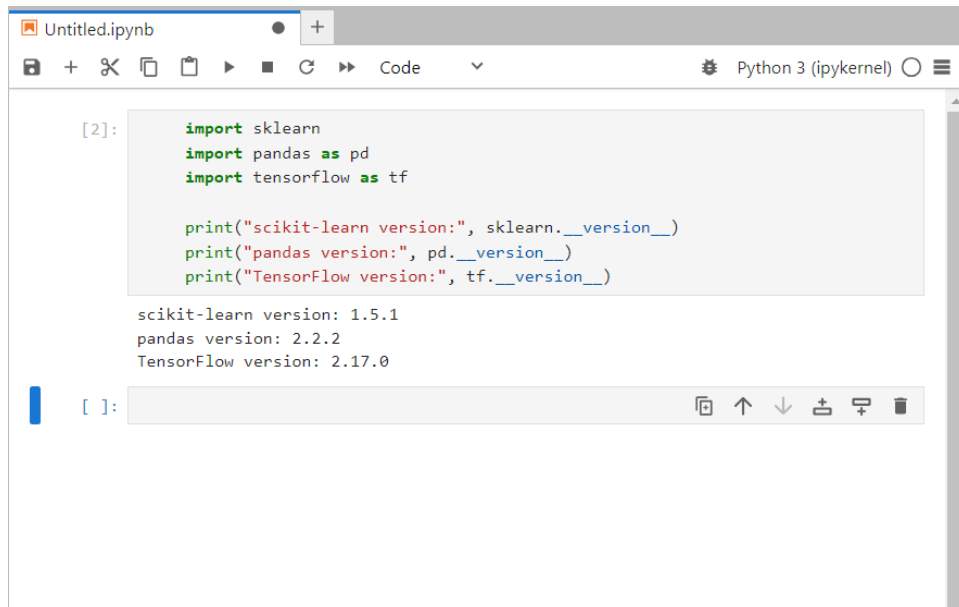
3. Test the Libraries:

- In the new notebook, enter the following code to verify the installations:

```
import sklearn
import pandas as pd
import tensorflow as tf
```

```
print("scikit-learn version:", sklearn.__version__)
print("pandas version:", pd.__version__)
print("TensorFlow version:", tf.__version__)
```

- Run the cell. You should see the versions of scikit-learn, pandas, and TensorFlow printed out.



The screenshot shows a Jupyter Notebook window titled 'Untitled.ipynb'. The interface includes a toolbar with icons for saving, adding, deleting, and running code, along with a 'Code' dropdown menu. The Python 3 (ipykernel) environment is selected. A code cell, labeled '[2]:', contains the following Python code:

```
import sklearn
import pandas as pd
import tensorflow as tf

print("scikit-learn version:", sklearn.__version__)
print("pandas version:", pd.__version__)
print("TensorFlow version:", tf.__version__)
```

Below the code cell, the output is displayed:

```
scikit-learn version: 1.5.1
pandas version: 2.2.2
TensorFlow version: 2.17.0
```

At the bottom, there is an input prompt '[]:' followed by a toolbar with icons for copying, pasting, undo, redo, and deleting.

Additional Steps (Optional)

4. Upgrade pip:

- You can upgrade pip to the latest version by running:

```
pip install --upgrade pip
```

Troubleshooting

- If you encounter any issues with the installations, make sure your Command Prompt is run as an administrator.
- Ensure that Python and pip are added to your system PATH:
- Add Python and pip to PATH:
 - In the Edit Environment Variable window, click on New and add the path to your Python installation directory. This is usually `C:\Python3 (Version)` or `C:\Users\<YourUsername>\AppData\Local\Programs\Python\Python3 (Version)` depending on your installation.
 - Add another new entry for the Scripts directory inside your Python installation directory. This is usually `C:\Python3 (Version)\Scripts` or `C:\Users\<YourUsername>\AppData\Local\Programs\Python\Python3 (Version)\Scripts`.