JUNIA ISEN

Artificial Intelligence

Tutorial : Setup a Python Environment for AI labworks

(or any other Python related JUNIA projects or courses)

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Why Python ?

- Why is Python the best for Artificial Intelligence and Machine Learning?

  https://www.tristatetechnology.com/blog/why-is-python-the-best-for-artificial-intelligence-and-machine-learning/

- 8 Reasons Why Python is Good for AI and ML

  https://djangostars.com/blog/why-python-is-good-for-artificial-intelligence-and-machine-learning/

- ChatGPT answer

  Python is the best language for AI and ML due to its simplicity, readability, and vast ecosystem of libraries like TensorFlow, PyTorch, and Scikit-learn. Its easy syntax accelerates development and debugging, allowing researchers to focus on algorithms rather than code complexity. Python's active community, extensive documentation, and support for integration with other languages and tools also make it ideal for AI and ML tasks.

Choose your IDE

VSCode

Local IDE

+ Github Copilot

JetBrains PyCharm

Local IDE

Jupyter notebook

Local Web

Google Colab

Cloud

Python AI/ML/DL environment

Python packages

	Python	The interpreter (or the programming language)
	Conda	An environment manager (like virtualenv, pyenv, …). A command line tool. Allows to install multiple versions of Python or different library sets and versions
	Anaconda & Miniconda	A python distributions, Simplify package and virtual environment management **Anaconda = Python + Conda + A set of pre-installed useful data science libraries** **Miniconda = Python + Conda**
	Jupyter	Web-based interactive development environment for code, data and notebooks. Distributed as a python package (Depends on Python, but not on Anaconda). **Labworks, evaluations and exam will be done in Jupyter.**
	Numpy Scikit-learn Tensorflow Keras Pandas …	Python packages for artificial intelligence, machine learning, deep learning, data science, scientific computing, visualization, machine vision, natural language processing, …

IDE vs environement

- Don't confuse your python IDE with python environment

- You can configure multiple environments and install multiple IDE.

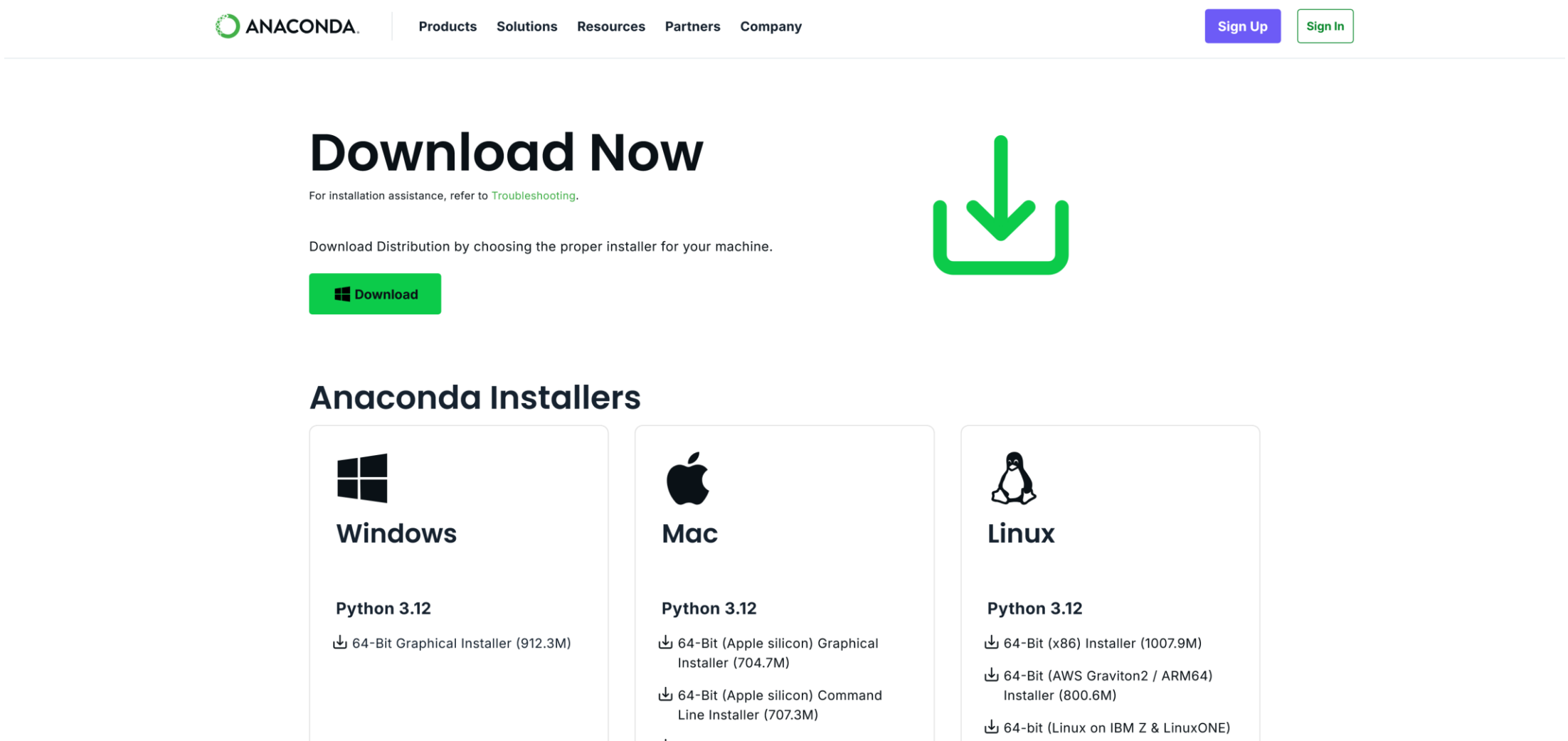
  Any IDE can edit and run your scripts in any environment you created.

Anaconda based environments

- Anaconda is easy to setup and could be used in different courses, projects and labworks (AI, Python course, M1 projects, etc.).
- Each Python project can have its own dependencies (libraries or packages) and its own Python version, regardless of what dependencies every other project has.
- It allows to create a separate *virtual* environment and a specific configuration for each different context.
- This tutorial is just an example. A lot of alternative solutions exist.
- This tutorial doesn’t include GPU setup.

1. Download Anaconda

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



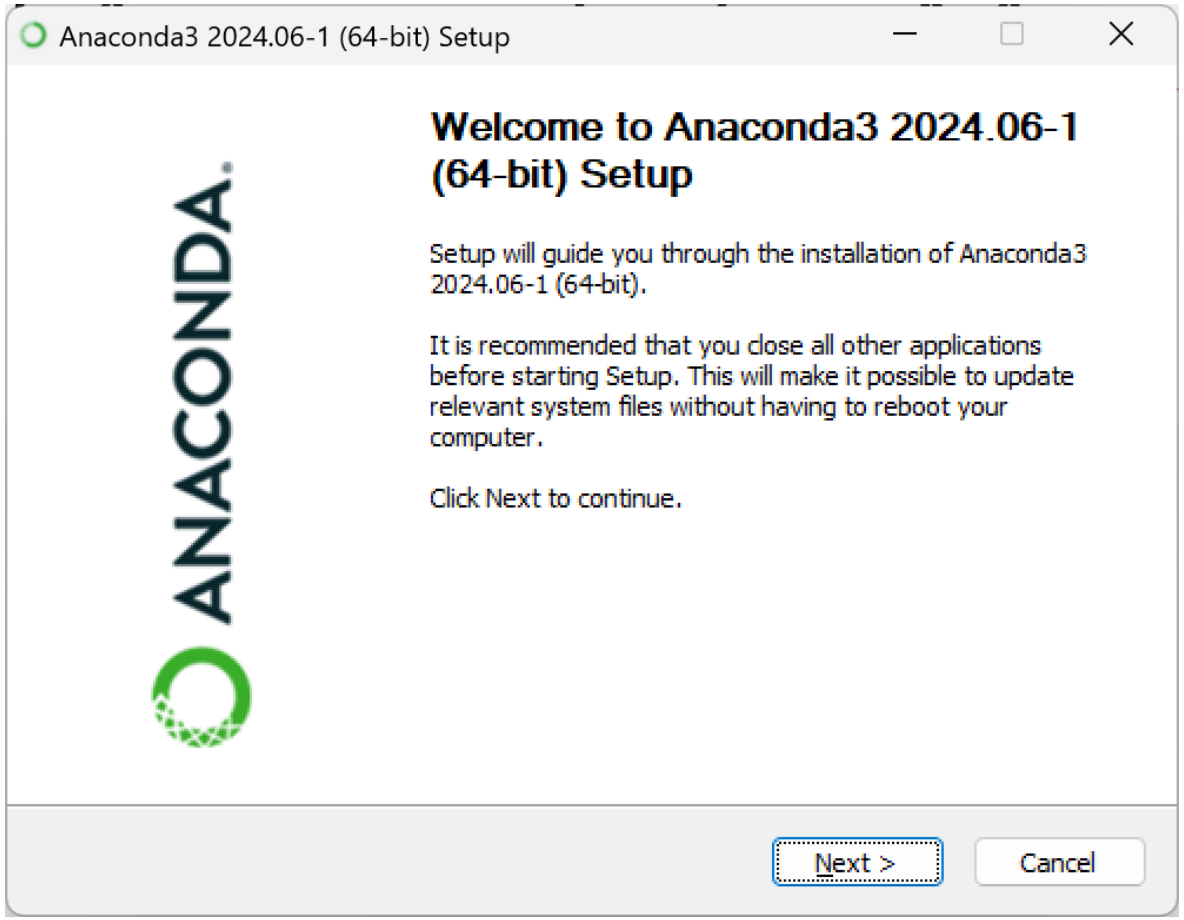
1. Or mininaconda

https://docs.anaconda.com/miniconda/

Windows

Python version	Name	Size	SHA256 hash
Python 3.12	Miniconda3 Windows 64-bit	85.6 MiB	ff8ab50f0303c7b9097387967ac2a721016d020069187eff4e172fc14930e
Python 3.11	Miniconda3 Windows 64-bit	87.4 MiB	305d1c57ece6a6405663a0fb493e2581cd14c30382a5f49fd44110be30ad4
Python 3.10	Miniconda3 Windows 64-bit	83.1 MiB	a62953541da3e18138ba1d8d5adb04ba65751a8e6e0a83191d218f56e6665
Python 3.9	Miniconda3 Windows 64-bit	83.1 MiB	ec83f12a8e863cc3497ad9b50d2d759abbf3de9db56491166e6a476171bf0

2. Install Anaconda (or Miniconda)



Remember : Anaconda = Python + Conda + A set of pre-installed useful libraries

3. Update Conda

(and its packages, to the latest versions)

- Open a terminal or a command prompt.
  Ex. in Windows :  +R, then type `cmd`

- Run :

```
conda update conda
```

and

```
conda update --all
```

4. Create your environment

- Open a terminal or a command prompt.
  Ex. in Windows :  +R, then type `cmd`

- Run (replace `my_environment_name` with your favorite name)

```
conda create -n my_environment_name
```

5. Activate your environement

```
activate my_environment_name
```

- Or deactivate it :

```
deactivate
```

- Or test other Conda commands :

https://docs.conda.io/projects/conda/en/4.6.0/_downloads/52a95608c49671267e40c689e0bc00ca/conda-cheatsheet.pdf

6. Install librairies

- Installed librairies after this step will be available the activated environement only

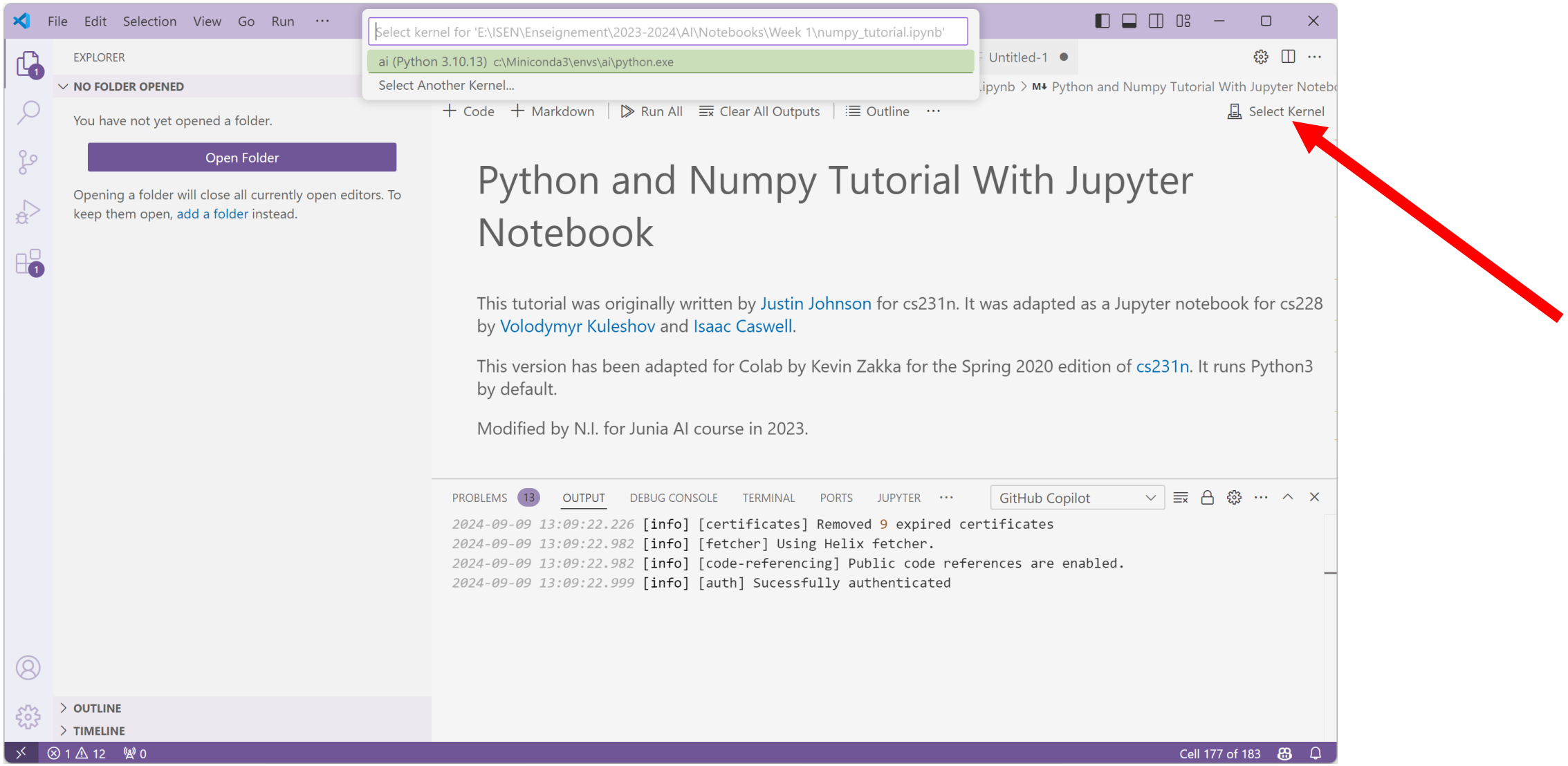
Install Jupyter `conda install jupyter`

Run Jypyter `jupyter-notebook`

Install numpy `conda install numpy`

…

7. Test in VSCode



Or use cloud solutions…

- If you do not have a powerful PC
- Or If you were not able to run all the previous steps
- Or you have a problem with your setup (Especially during exams)
- Or if you want just a rapid Python/Ai playground

Use Google Colab:

https://colab.research.google.com/

Useful urls

https://www.python.org/

https://www.anaconda.com/

https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html

https://developer.nvidia.com/cuda-downloads

https://developer.nvidia.com/cudnn

https://www.youtube.com/watch?v=82KLS2C_gNQ&list=PLO_fdPEVlfKqMDNmCFzQISI2H_nJcEDJq