

Memoria Gráfica Instalación y Configuración Entorno Virtual y Tensor Flow

Las siguientes instalaciones, actualizaciones y configuraciones se realizaron desde el CMD de anaconda.

- 1) Creación y activación del entorno virtual “tf_env” → **python -m venv tf_env**
- 2) Activación del entorno virtual → **tf_env\Scripts\activate**

```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Versión 10.0.26200.6899]
(c) Microsoft Corporation. Todos los derechos reservados.

(base) C:\Users\gabri>python -m venv tf_env
(base) C:\Users\gabri>tf_env\Scripts\activate

(tf_env) (base) C:\Users\gabri>pip install --upgrade pip
Requirement already satisfied: pip in c:\users\gabri\tf_env\lib\site-packages (25.1.1)
Collecting pip
  Using cached pip-25.3-py3-none-any.whl.metadata (4.7 kB)
  Using cached pip-25.3-py3-none-any.whl (1.8 MB)

[notice] A new release of pip is available: 25.1.1 -> 25.3
[notice] To update, run: python.exe -m pip install --upgrade pip
ERROR: To modify pip, please run the following command:
C:\Users\gabri\tf_env\Scripts\python.exe -m pip install --upgrade pip

(tf_env) (base) C:\Users\gabri>python.exe -m pip install --upgrade pipC:\Users\gabri\tf_env\Scripts\python.exe -m pip install --upgrade pip

Usage:
  C:\Users\gabri\tf_env\Scripts\python.exe -m pip install [options] <requirement specifier> [package-index-options] ...
  C:\Users\gabri\tf_env\Scripts\python.exe -m pip install [options] -r <requirements file> [package-index-options] ...
  C:\Users\gabri\tf_env\Scripts\python.exe -m pip install [options] [-e] <vcs project url> ...
  C:\Users\gabri\tf_env\Scripts\python.exe -m pip install [options] [-e] <local project path> ...
  C:\Users\gabri\tf_env\Scripts\python.exe -m pip install [options] <archive url/path> ...

no such option: -m

(tf_env) (base) C:\Users\gabri>python.exe -m pip install --upgrade pip
Requirement already satisfied: pip in c:\users\gabri\tf_env\lib\site-packages (25.1.1)
Collecting pip
  Using cached pip-25.3-py3-none-any.whl.metadata (4.7 kB)
  Using cached pip-25.3-py3-none-any.whl (1.8 MB)
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 25.1.1
    Uninstalling pip-25.1.1:
      Successfully uninstalled pip-25.1.1
```

- 3) Instalación de TensorFlow dentro de tf_env y activado → **pip install tensorflow**

```
C:\WINDOWS\system32\cmd. x + v
(tf_env) (base) C:\Users\gabri>pip install tensorflow
Collecting tensorflow
  Using cached tensorflow-2.20.0-cp313-cp313-win_amd64.whl.metadata (4.6 kB)
Collecting absl-py<1.0.0 (from tensorflow)
  Using cached absl_py-2.3.1-py3-none-any.whl.metadata (3.3 kB)
Collecting astunparse<=1.6.0 (from tensorflow)
  Using cached astunparse-1.6.3-py2.py3-none-any.whl.metadata (4.4 kB)
Collecting flatbuffers>=24.3.25 (from tensorflow)
  Using cached flatbuffers-25.9.23-py2.py3-none-any.whl.metadata (875 bytes)
```

- 4) Instalación de jupyter notebook dentro de tf_env activado → **pip install notebook**

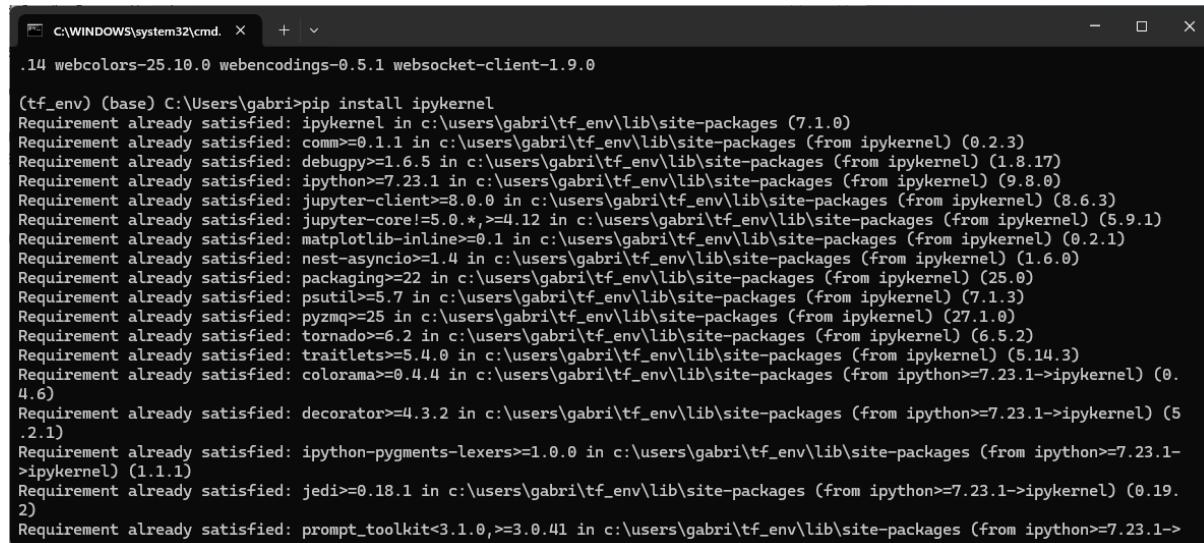
```
C:\WINDOWS\system32\cmd. x + v
Using cached rich-14.2.0-py3-none-any.whl (243 kB)
Using cached pygments-2.19.2-py3-none-any.whl (1.2 MB)
Using cached markdown_it_py-4.0.0-py3-none-any.whl (87 kB)
Using cached mdurl-0.1.2-py3-none-any.whl (10.0 kB)
Installing collected packages: namex, libclang, flatbuffers, wrapt, wheel, urllib3, typing_extensions, termcolor, tensorboard-d
ata-server, six, setuptools, pygments, protobuf, pillow, packaging, opt_einsum, numpy, mdurl, markupsafe, markdown, idna, gast,
charset_normalizer, certifi, absl-py, werkzeug, requests, optree, ml_dtypes, markdown-it-py, h5py, grpcio, google_pasta, astun
parse, tensorboard, rich, keras, tensorflow
Successfully installed absl-py-2.3.1 astunparse-1.6.3 certifi-2025.11.12 charset_normalizer-3.4.4 flatbuffers-25.9.23 gast-0.7.
0 google_pasta-0.2.0 grpcio-1.76.0 h5py-3.15.1 idna-3.11 keras-3.12.0 libclang-18.1.1 markdown-3.10 markdown-it-py-4.0.0 markup
safe-3.0.3 mdurl-0.1.2 ml_dtypes-0.5.4 namex-0.1.0 numpy-2.3.5 opt_einsum-3.4.0 optree-0.18.0 packaging-25.0 pillow-12.0.0 prot
obuf-6.33.2 pygments-2.19.2 requests-2.32.5 rich-14.2.0 setuptools-80.9.0 six-1.17.0 tensorboard-2.20.0 tensorboard-data-server
-0.7.2 tensorflow-2.20.0 termcolor-3.2.0 typing_extensions-4.15.0 urllib3-2.6.0 werkzeug-3.1.4 wheel-0.45.1 wrapt-2.0.1

(tf_env) (base) C:\Users\gabri>pip install notebook
Collecting notebook
  Using cached notebook-7.5.0-py3-none-any.whl.metadata (10 kB)
Collecting jupyter-server<3,>=2.4.0 (from notebook)
  Using cached jupyter_server-2.17.0-py3-none-any.whl.metadata (8.5 kB)
Collecting jupyterlab-server<3,>=2.28.0 (from notebook)
  Using cached jupyterlab_server-2.28.0-py3-none-any.whl.metadata (5.9 kB)
Collecting jupyterlab<4.6,>=4.5.0rc0 (from notebook)
  Using cached jupyterlab-4.5.0-py3-none-any.whl.metadata (16 kB)
Collecting notebook_shim<0.3,>=0.2 (from notebook)
  Using cached notebook_shim-0.2.4-py3-none-any.whl.metadata (4.0 kB)
```

- 5) Configurar y registrar el entorno virtual tf_env en Jupyter como un kernel →

pip install ipykernek

python -m ipykernek install --user --name=tf_env --display-name "TensorFlow ENV"



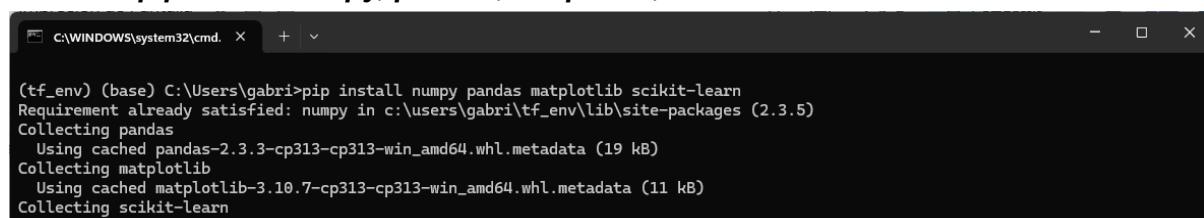
```
C:\WINDOWS\system32\cmd. x + v

.14 webcolors-25.10.0 webencodings-0.5.1 websocket-client-1.9.0

(tf_env) (base) C:\Users\gabri>pip install ipykernel
Requirement already satisfied: ipykernel in c:\users\gabri\tf_env\lib\site-packages (7.1.0)
Requirement already satisfied: comm>=0.1.1 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (0.2.3)
Requirement already satisfied: debugpy>=1.6.5 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (1.8.17)
Requirement already satisfied: jupyter-client>=8.0.0 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (8.6.3)
Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (5.9.1)
Requirement already satisfied: matplotlib-inline>=0.1 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (0.2.1)
Requirement already satisfied: nest-asyncio>=1.4 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (1.6.0)
Requirement already satisfied: packaging>=22 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (25.0)
Requirement already satisfied: psutil>=5.7 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (7.1.3)
Requirement already satisfied: pyzmq>=25 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (27.1.0)
Requirement already satisfied: tornado>=6.2 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (6.5.2)
Requirement already satisfied: traitlets>=5.4.0 in c:\users\gabri\tf_env\lib\site-packages (from ipykernel) (5.14.3)
Requirement already satisfied: colorama>=0.4.4 in c:\users\gabri\tf_env\lib\site-packages (from ipython>=7.23.1->ipykernel) (0.4.6)
Requirement already satisfied: decorator>=4.3.2 in c:\users\gabri\tf_env\lib\site-packages (from ipython>=7.23.1->ipykernel) (5.2.1)
Requirement already satisfied: ipython-pygments-lexers>=1.0.0 in c:\users\gabri\tf_env\lib\site-packages (from ipython>=7.23.1->ipykernel) (1.1.1)
Requirement already satisfied: jedi>=0.18.1 in c:\users\gabri\tf_env\lib\site-packages (from ipython>=7.23.1->ipykernel) (0.19.2)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in c:\users\gabri\tf_env\lib\site-packages (from ipython>=7.23.1->
```

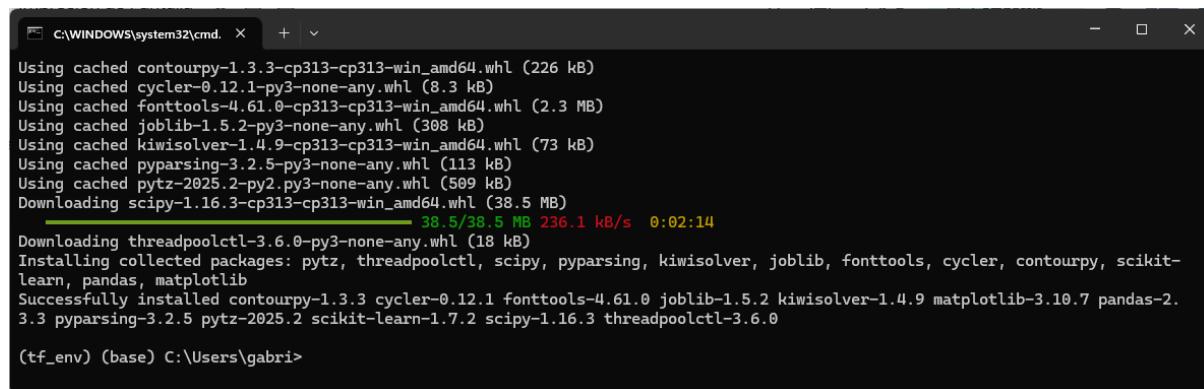
- 6) Instalación de numpy, pandas, matplotlib, scikit-learn dentro del entorno virtual tf_env

→ **pip install numpy, pandas, matplotlib, scikit-learn**



```
C:\WINDOWS\system32\cmd. x + v

(tf_env) (base) C:\Users\gabri>pip install numpy pandas matplotlib scikit-learn
Requirement already satisfied: numpy in c:\users\gabri\tf_env\lib\site-packages (2.3.5)
Collecting pandas
  Using cached pandas-2.3.3-cp313-cp313-win_amd64.whl.metadata (19 kB)
Collecting matplotlib
  Using cached matplotlib-3.10.7-cp313-cp313-win_amd64.whl.metadata (11 kB)
Collecting scikit-learn
```

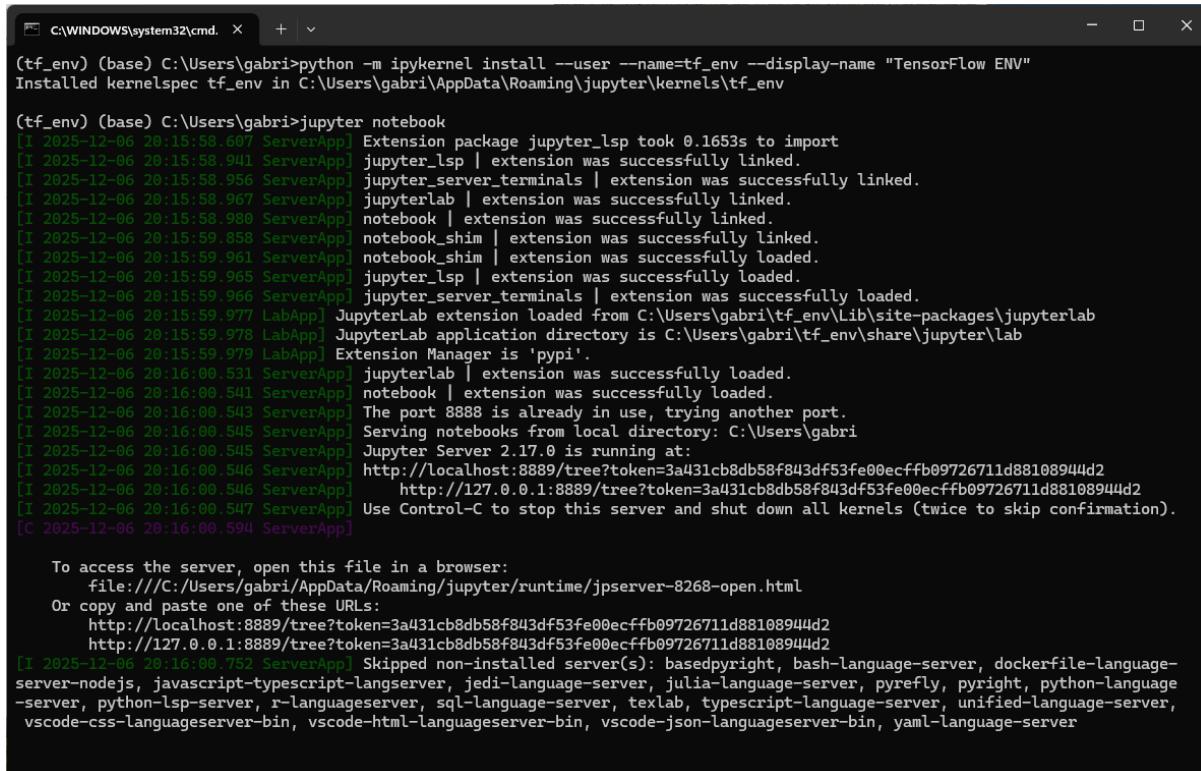


```
C:\WINDOWS\system32\cmd. x + v

Using cached contourpy-1.3.3-cp313-cp313-win_amd64.whl (226 kB)
Using cached cycler-0.12.1-py3-none-any.whl (8.3 kB)
Using cached fonttools-4.61.0-cp313-cp313-win_amd64.whl (2.3 MB)
Using cached joblib-1.5.2-py3-none-any.whl (309 kB)
Using cached kiwisolver-1.4.9-cp313-cp313-win_amd64.whl (73 kB)
Using cached pyparsing-3.2.5-py3-none-any.whl (113 kB)
Using cached pytz-2025.2-py3-none-any.whl (509 kB)
Downloading scipy-1.16.3-cp313-cp313-win_amd64.whl (38.5 MB)
   38.5/38.5 MB 236.1 kB/s  0:02:14
Downloading threadpoolctl-3.6.0-py3-none-any.whl (18 kB)
Installing collected packages: pytz, threadpoolctl, scipy, pyparsing, kiwisolver, joblib, fonttools, cycler, contourpy, scikit-learn, pandas, matplotlib
Successfully installed contourpy-1.3.3 cycler-0.12.1 fonttools-4.61.0 joblib-1.5.2 kiwisolver-1.4.9 matplotlib-3.10.7 pandas-2.3.3 pyparsing-3.2.5 pytz-2025.2 scikit-learn-1.7.2 scipy-1.16.3 threadpoolctl-3.6.0

(tf_env) (base) C:\Users\gabri>
```

7) Entrar a la app *jupyter notebook*



```
C:\WINDOWS\system32\cmd. x + - □ X
(tf_env) (base) C:\Users\gabri>python -m ipykernel install --user --name=tf_env --display-name "TensorFlow ENV"
Installed kernelspec tf_env in C:\Users\gabri\AppData\Roaming\jupyter\kernels\tf_env

(tf_env) (base) C:\Users\gabri>jupyter notebook
[I 2025-12-06 20:15:58.607 ServerApp] Extension package jupyter_lsp took 0.1653s to import
[I 2025-12-06 20:15:58.941 ServerApp] jupyter_lsp | extension was successfully linked.
[I 2025-12-06 20:15:58.956 ServerApp] jupyter_server_terminals | extension was successfully linked.
[I 2025-12-06 20:15:58.967 ServerApp] jupyterlab | extension was successfully linked.
[I 2025-12-06 20:15:58.980 ServerApp] notebook | extension was successfully linked.
[I 2025-12-06 20:15:59.858 ServerApp] notebook_shim | extension was successfully linked.
[I 2025-12-06 20:15:59.961 ServerApp] notebook_shim | extension was successfully loaded.
[I 2025-12-06 20:15:59.965 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2025-12-06 20:15:59.966 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2025-12-06 20:15:59.977 LabApp] JupyterLab extension loaded from C:\Users\gabri\tf_env\lib\site-packages\jupyterlab
[I 2025-12-06 20:15:59.978 LabApp] JupyterLab application directory is C:\Users\gabri\tf_env\share\jupyter\lab
[I 2025-12-06 20:15:59.979 LabApp] Extension Manager is 'pypi'.
[I 2025-12-06 20:16:00.531 ServerApp] jupyterlab | extension was successfully loaded.
[I 2025-12-06 20:16:00.541 ServerApp] notebook | extension was successfully loaded.
[I 2025-12-06 20:16:00.543 ServerApp] The port 8888 is already in use, trying another port.
[I 2025-12-06 20:16:00.545 ServerApp] Serving notebooks from local directory: C:\Users\gabri
[I 2025-12-06 20:16:00.545 ServerApp] Jupyter Server 2.17.0 is running at:
[I 2025-12-06 20:16:00.546 ServerApp] http://localhost:8889/tree?token=3a431cb8db58f843df53fe00ecffb09726711d88108944d2
[I 2025-12-06 20:16:00.546 ServerApp] http://127.0.0.1:8889/tree?token=3a431cb8db58f843df53fe00ecffb09726711d88108944d2
[I 2025-12-06 20:16:00.547 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 2025-12-06 20:16:00.594 ServerApp]

To access the server, open this file in a browser:
  file:///C:/Users/gabri/AppData/Roaming/jupyter/runtime/jpserver-8268-open.html
Or copy and paste one of these URLs:
  http://localhost:8889/tree?token=3a431cb8db58f843df53fe00ecffb09726711d88108944d2
  http://127.0.0.1:8889/tree?token=3a431cb8db58f843df53fe00ecffb09726711d88108944d2
[1 2025-12-06 20:16:00.752 ServerApp] Skipped non-installed server(s): basedpyright, bash-language-server, dockerfile-language-server-nodejs, javascript-typescript-langserver, jedi-language-server, julia-language-server, pyrefly, pyright, python-language-server, python-lsp-server, r-languageserver, sql-language-server, texlab, typescript-language-server, unified-language-server, vscode-css-languageserver-bin, vscode-html-languageserver-bin, vscode-json-languageserver-bin, yaml-language-server
```

8) Dentro de Jupyter Notebook, se puede observar el Kernel creado “TensorFlor ENV” para su selección.

