

Using the Jupyter Notebook Docker to Run Streamlit Apps

This document describes how to use the **Jupyter Notebook Docker environment** to execute **Streamlit applications**.

1. Installation Script for Dependencies

A Python script is provided to install all required dependencies for Streamlit and the associated machine-learning models.

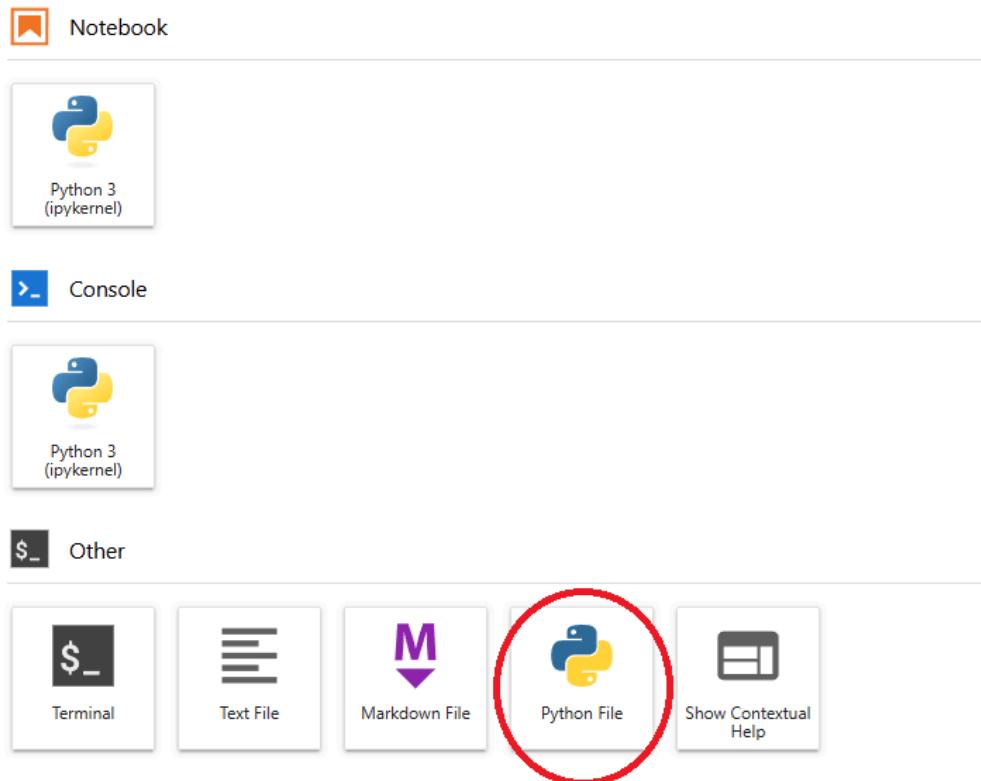
You can find this script at:

Materiales docentes / 2526 / streamlit_preinstalation.py

Inside the Jupyter environment, you may either:

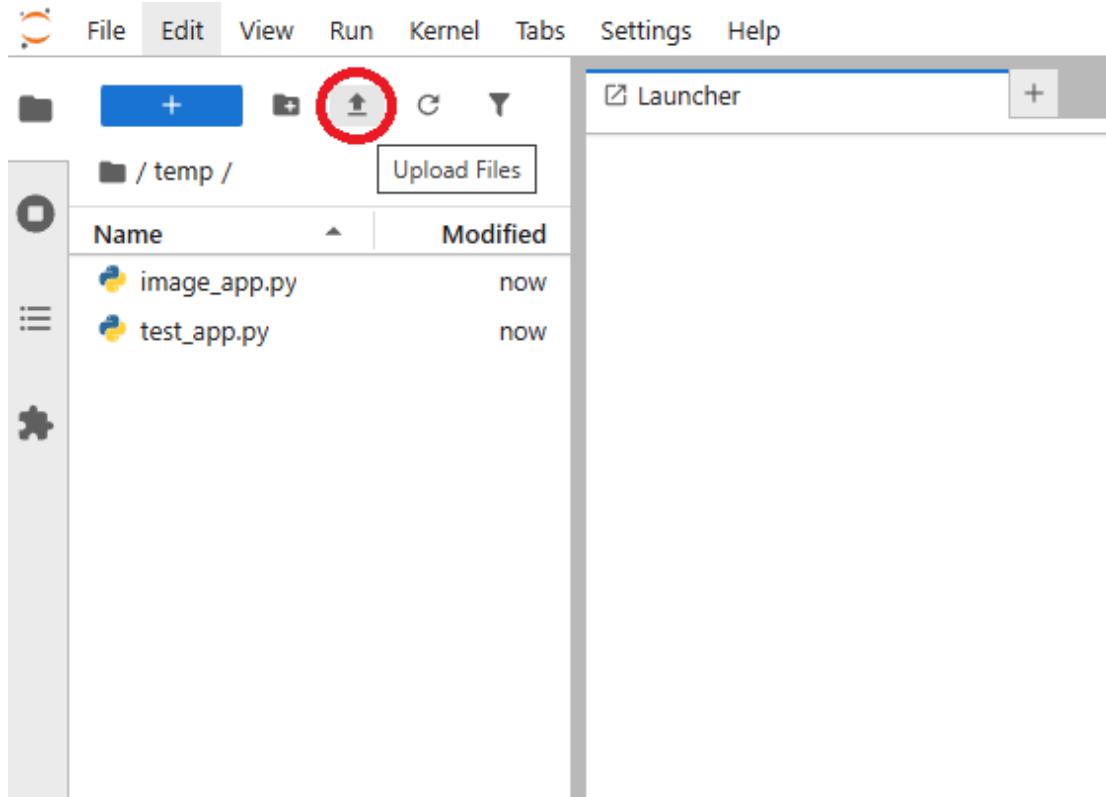
Option A — Create a new Python file

Create a new `.py` file and copy–paste the content of the script into it.



Option B — Upload the script using the upload button

You can directly upload the script into the working directory.



2. Running the Script Inside Jupyter

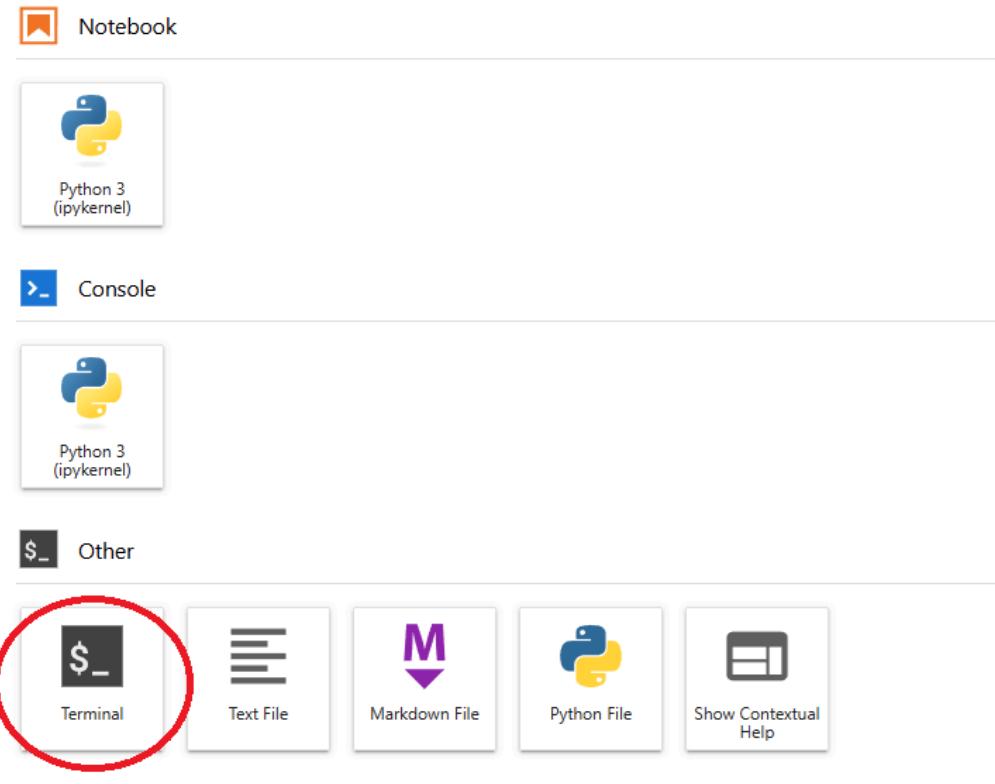
This script must be executed **from a terminal launched inside Jupyter Notebook**.

To do this:

1. Start the Jupyter Docker container.
2. Open your browser and navigate to:

`localhost:18888`

3. Open a **new terminal** from the Jupyter interface.



```
$ python streamlit_preinstallation.py
[INFO] Installing transformers...
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: transformers in /usr/local/lib/python3.10/site-packages (4.46.3)
Requirement already satisfied: filelock in /usr/local/lib/python3.10/site-packages (from transformers) (3.20.0)
Requirement already satisfied: huggingface-hub<1.0,>=0.23.2 in /usr/local/lib/python3.10/site-packages (from transformers) (0.36.0)
Requirement already satisfied: numpy<1.17 in /usr/local/lib/python3.10/site-packages (from transformers) (2.2.6)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/site-packages (from transformers) (25.0)
Requirement already satisfied: pyyaml>5.1 in /usr/local/lib/python3.10/site-packages (from transformers) (6.0.3)
Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.10/site-packages (from transformers) (2025.11.3)
Requirement already satisfied: requests in /usr/local/lib/python3.10/site-packages (from transformers) (2.32.5)
Requirement already satisfied: tokenizers<0.21,>=0.20 in /usr/local/lib/python3.10/site-packages (from transformers) (0.20.3)
Requirement already satisfied: safetensors>=0.4.1 in /usr/local/lib/python3.10/site-packages (from transformers) (0.6.2)
Requirement already satisfied: tqdm>4.27 in /usr/local/lib/python3.10/site-packages (from transformers) (4.67.1)
```

3. Important Notes About Installation

The script may take several minutes to complete.

During the first execution, you may encounter an error such as:

```
ModuleNotFoundError: No module named 'kokoro'
```

```
[INFO] Installing system package espeak-ng with apt-get...
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?

[WARNING] Could not install 'espeak-ng' via apt-get.
Make sure your Docker base image supports apt-get.
Error details: Command '['apt-get', '-qq', '-y', 'install', 'espeak-ng']' returned non-zero exit status 100.

[INFO] Importing libraries and loading models...
/usr/local/lib/python3.10/site-packages/transformers/utils/hub.py:128: FutureWarning: Using 'TRANSFORMERS_CACHE' is deprecated and will be removed in v5 of Transformers. Use 'HF_HOME' instead.
warnings.warn(
Traceback (most recent call last):
  File "/workspace/temp/streamlit_preinstallation.py", line 73, in <module>
    main()
  File "/workspace/temp/streamlit_preinstallation.py", line 47, in main
    from kokoro import KPipeline
ModuleNotFoundError: No module named 'kokoro'
$ []
```

If this happens:

Run the script a second time.

In most cases, the process will continue successfully.

Near the end of the script, several **PyTorch** and **TensorFlow** models will be downloaded and installed.

You should see **progress bars** indicating that the models are being retrieved.

```
[WARNING] Could not install 'espeak-ng' via apt-get.
          Make sure your Docker base image supports apt-get.
          Error details: Command '['apt-get', '-qq', 'y', 'install', 'espeak-ng']' returned non-zero exit status 100.

[INFO] Importing libraries and loading models...
/usr/local/lib/python3.10/site-packages/transformers/utils/hub.py:128: FutureWarning: Using `TRANSFORMERS_CACHE` is deprecated and will be removed in v5 of Transformers. Use
  warnings.warn(
No model was supplied, defaulted to distilbert/distilbert-base-uncased-finetuned-sst-2-english and revision 714eb0f (https://huggingface.co/distilbert/distilbert-base-uncased
Using a pipeline without specifying a model name and revision in production is not recommended.
config.json: 100% [██████████]
model_safetensors: 100% [██████████]
tokenizer_config.json: 100% [██████████]
vocab.txt: 232kB [00:00, 743kB/s]
WARNING: Defaulting repo_id to hexgrad/Kokoro-82M. Pass repo_id='hexgrad/Kokoro-82M' to suppress this warning.
/usr/local/lib/python3.10/site-packages/torch/nn/modules/rnn.py:88: UserWarning: dropout option adds dropout after all but last recurrent layer, so non-zero dropout expects n
  warnings.warn("dropout option adds dropout after all but last "
/usr/local/lib/python3.10/site-packages/torch/nn/utils/weight_norm.py:134: FutureWarning: `torch.nn.utils.weight_norm` is deprecated in favor of `torch.nn.utils.parametrizati
  WeightNorm.apply(module, name, dim)
Defaulting to user installation because normal site-packages is not writable
Collecting en-core-web-sm==3.8.0
  Downloading https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.8.0/en_core_web_sm-3.8.0-py3-none-any.whl (12.8 MB)
    12.8/12.8 MB 1.8 MB/s 0:00:07
Installing collected packages: en-core-web-sm
Successfully installed en-core-web-sm-3.8.0
✓ Download and installation successful
You can now load the package via spacy.load('en_core_web_sm')

[OK] All packages installed and models loaded successfully.
```

4. Running a Test Streamlit Application

Once all dependencies are installed, you can run a Streamlit example app.

The test script is located at:

Materiales docentes / 2526 / test_app.py

You may again create or upload a `.py` file containing this script.

Then, open a Jupyter terminal and run:

```
streamlit run test_app.py
```

```
$ streamlit run test_app.py

Collecting usage statistics. To deactivate, set browser.gatherUsageStats to false.

You can now view your Streamlit app in your browser.

Local URL: http://localhost:8501
Network URL: http://172.25.0.2:8501
External URL: http://37.143.123.107:8501
```

After running the command, several URLs will appear in the terminal.

If everything is correct, open the **second URL** in your browser to access the Streamlit application running inside the Docker environment.



Simple Word Counter

Type or paste some text below, and I will count how many words it has.

Your text:

Count words

Finally, this allows to run the streamlit app that actually allows to listen the description of an image:

Image Captioning + Text-to-Speech Demo

1. Provide an image URL
2. The app will download and display the image
3. It will generate a caption using BLIP
4. Then it will generate audio of that caption using Kokoro

Image URL
<https://cdn-4.motorsport.com/images/amp/YBrE4pvY/s6/f1-australian-gp-2018-lewis-ha.jpg>

Process

The `use_column_width` parameter has been deprecated and will be removed in a future release. Please utilize the `use_container_width` parameter instead.



Downloaded image

Image description generated!

Description: the start of the race

Audio generated!

▶ 0:00 / 0:01