

# drive

May 15, 2025

```
[53]: !pip install torch torchvision torchaudio --index-url https://download.pytorch.  
      ↪org/whl/cu118
```

```
Looking in indexes: https://download.pytorch.org/whl/cu118
Requirement already satisfied: torch in /usr/local/lib/python3.11/dist-packages  
(2.5.1+cu118)
Requirement already satisfied: torchvision in /usr/local/lib/python3.11/dist-  
packages (0.20.1+cu124)
Requirement already satisfied: torchaudio in /usr/local/lib/python3.11/dist-  
packages (2.5.1+cu124)
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-  
packages (from torch) (3.17.0)
Requirement already satisfied: typing-extensions>=4.8.0 in  
/usr/local/lib/python3.11/dist-packages (from torch) (4.12.2)
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-  
packages (from torch) (3.4.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages  
(from torch) (3.1.5)
Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages  
(from torch) (2024.10.0)
Requirement already satisfied: nvidia-cuda-nvrtc-cu11==11.8.89 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.89)
Requirement already satisfied: nvidia-cuda-runtime-cu11==11.8.89 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.89)
Requirement already satisfied: nvidia-cuda-cupti-cu11==11.8.87 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.87)
Requirement already satisfied: nvidia-cudnn-cu11==9.1.0.70 in  
/usr/local/lib/python3.11/dist-packages (from torch) (9.1.0.70)
Requirement already satisfied: nvidia-cublas-cu11==11.11.3.6 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.11.3.6)
Requirement already satisfied: nvidia-cufft-cu11==10.9.0.58 in  
/usr/local/lib/python3.11/dist-packages (from torch) (10.9.0.58)
Requirement already satisfied: nvidia-curand-cu11==10.3.0.86 in  
/usr/local/lib/python3.11/dist-packages (from torch) (10.3.0.86)
Requirement already satisfied: nvidia-cusolver-cu11==11.4.1.48 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.4.1.48)
Requirement already satisfied: nvidia-cusparse-cu11==11.7.5.86 in  
/usr/local/lib/python3.11/dist-packages (from torch) (11.7.5.86)
```

```
Requirement already satisfied: nvidia-nccl-cu11==2.21.5 in
/usr/local/lib/python3.11/dist-packages (from torch) (2.21.5)
Requirement already satisfied: nvidia-nvtx-cu11==11.8.86 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.86)
Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-
packages (from torch) (3.1.0)
Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-
packages (from torch) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in
/usr/local/lib/python3.11/dist-packages (from sympy==1.13.1->torch) (1.3.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages
(from torchvision) (1.26.4)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in
/usr/local/lib/python3.11/dist-packages (from torchvision) (11.1.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2->torch) (3.0.2)
```

```
[54]: !git clone https://github.com/ultralytics/yolov5
```

```
Cloning into 'yolov5'...
remote: Enumerating objects: 17270, done.
remote: Counting objects: 100% (1/1), done.
remote: Total 17270 (delta 0), reused 0 (delta 0), pack-reused 17269 (from 2)
Receiving objects: 100% (17270/17270), 16.11 MiB | 20.69 MiB/s, done.
Resolving deltas: 100% (11861/11861), done.
```

```
[57]: !cd yolov5 & pip install -r requirements.txt
```

```
ERROR: Could not open requirements file: [Errno 2] No such file or
directory: 'requirements.txt'
```

```
[12]: !curl "https://bootstrap.pypa.io/get-pip.py" -o "get-pip.py"
```

% Total	% Received	% Xferd	Average Speed		Time	Time	Time	Current
			Dload	Upload	Total	Spent	Left	Speed
100 2246k	100 2246k	0 0	8911k	0	--:--:--	--:--:--	--:--:--	8949k

```
[13]: !python3 get-pip.py
```

```
Collecting pip
  Using cached pip-25.0-py3-none-any.whl.metadata (3.7 kB)
Using cached pip-25.0-py3-none-any.whl (1.8 MB)
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 25.0
    Uninstalling pip-25.0:
```

Successfully uninstalled pip-25.0  
Successfully installed pip-25.0

```
[14]: get_ipython().system('pip install pip')
```

Requirement already satisfied: pip in /usr/local/lib/python3.11/dist-packages (25.0)

```
[15]: !pip install --upgrade pip
```

Requirement already satisfied: pip in /usr/local/lib/python3.11/dist-packages (25.0)

```
[5]: !pip install torch torchvision torchaudio --index-url https://download.pytorch.  
      ↪org/whl/cu118
```

Looking in indexes: https://download.pytorch.org/whl/cu118  
Requirement already satisfied: torch in /usr/local/lib/python3.11/dist-packages (2.5.1+cu124)  
Requirement already satisfied: torchvision in /usr/local/lib/python3.11/dist-packages (0.20.1+cu124)  
Requirement already satisfied: torchaudio in /usr/local/lib/python3.11/dist-packages (2.5.1+cu124)  
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from torch) (3.17.0)  
Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/lib/python3.11/dist-packages (from torch) (4.12.2)  
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-packages (from torch) (3.4.2)  
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages (from torch) (3.1.5)  
Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages (from torch) (2024.10.0)  
INFO: pip is looking at multiple versions of torch to determine which version is compatible with other requirements. This could take a while.  
Collecting torch  
 Downloading https://download.pytorch.org/whl/cu118/torch-2.6.0%2Bcu118-cp311-cp311-linux\_x86\_64.whl.metadata (27 kB)  
Collecting nvidia-cuda-nvrtc-cu11==11.8.89 (from torch)  
 Downloading https://download.pytorch.org/whl/cu118/nvidia\_cuda\_nvrtc\_cu11-11.8.89-py3-none-manylinux1\_x86\_64.whl (23.2 MB)  
23.2/23.2 MB  
139.5 MB/s eta 0:00:00  
Collecting nvidia-cuda-runtime-cu11==11.8.89 (from torch)  
 Downloading https://download.pytorch.org/whl/cu118/nvidia\_cuda\_runtime\_cu11-11.8.89-py3-none-manylinux1\_x86\_64.whl (875 kB)

875.6/875.6

kB 15.4 MB/s eta 0:00:00

Collecting nvidia-cuda-cupti-cu11==11.8.87 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cuda\\_cupti\\_cu11-11.8.87-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cuda_cupti_cu11-11.8.87-py3-none-manylinux1_x86_64.whl) (13.1 MB)

13.1/13.1 MB

118.9 MB/s eta 0:00:00

Collecting nvidia-cudnn-cu11==9.1.0.70 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cudnn\\_cu11-9.1.0.70-py3-none-manylinux2014\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cudnn_cu11-9.1.0.70-py3-none-manylinux2014_x86_64.whl) (663.9 MB)

663.9/663.9

MB 36.2 MB/s eta 0:00:00

Collecting nvidia-cublas-cu11==11.11.3.6 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cublas\\_cu11-11.11.3.6-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cublas_cu11-11.11.3.6-py3-none-manylinux1_x86_64.whl) (417.9 MB)

417.9/417.9

MB 53.0 MB/s eta 0:00:00

Collecting nvidia-cufft-cu11==10.9.0.58 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cufft\\_cu11-10.9.0.58-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cufft_cu11-10.9.0.58-py3-none-manylinux1_x86_64.whl) (168.4 MB)

168.4/168.4

MB 66.2 MB/s eta 0:00:00

Collecting nvidia-curand-cu11==10.3.0.86 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_curand\\_cu11-10.3.0.86-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_curand_cu11-10.3.0.86-py3-none-manylinux1_x86_64.whl) (58.1 MB)

58.1/58.1 MB

78.8 MB/s eta 0:00:00

Collecting nvidia-cusolver-cu11==11.4.1.48 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cusolver\\_cu11-11.4.1.48-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cusolver_cu11-11.4.1.48-py3-none-manylinux1_x86_64.whl) (128.2 MB)

128.2/128.2

MB 63.6 MB/s eta 0:00:00

Collecting nvidia-cuspars-cu11==11.7.5.86 (from torch)

Downloading

[https://download.pytorch.org/whl/cu118/nvidia\\_cuspars-cu11-11.7.5.86-py3-none-manylinux1\\_x86\\_64.whl](https://download.pytorch.org/whl/cu118/nvidia_cuspars-cu11-11.7.5.86-py3-none-manylinux1_x86_64.whl) (204.1 MB)

204.1/204.1

MB 67.8 MB/s eta 0:00:00

```

Collecting nvidia-nccl-cu11==2.21.5 (from torch)
  Downloading
https://download.pytorch.org/whl/cu118/nvidia_nccl_cu11-2.21.5-py3-none-
manylinux2014_x86_64.whl (147.8 MB)
147.8/147.8

MB 64.7 MB/s eta 0:00:00
Collecting nvidia-nvtx-cu11==11.8.86 (from torch)
  Downloading
https://download.pytorch.org/whl/cu118/nvidia_nvtx_cu11-11.8.86-py3-none-
manylinux1_x86_64.whl (99 kB)
Collecting triton==3.2.0 (from torch)
  Downloading https://download.pytorch.org/whl/triton-3.2.0-cp311-cp311-manylinu
x_2_27_x86_64.manylinux_2_28_x86_64.whl.metadata (1.4 kB)
Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-
packages (from torch) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in
/usr/local/lib/python3.11/dist-packages (from sympy==1.13.1->torch) (1.3.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages
(from torchvision) (1.26.4)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in
/usr/local/lib/python3.11/dist-packages (from torchvision) (11.1.0)
Collecting torch
  Downloading https://download.pytorch.org/whl/cu118/torch-2.5.1%2Bcu118-cp311-c
p311-linux_x86_64.whl (838.4 MB)
838.4/838.4

MB 31.9 MB/s eta 0:00:00
Requirement already satisfied: triton==3.1.0 in
/usr/local/lib/python3.11/dist-packages (from torch) (3.1.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2->torch) (3.0.2)
Installing collected packages: nvidia-nvtx-cu11, nvidia-nccl-cu11, nvidia-
cusparse-cu11, nvidia-curand-cu11, nvidia-cufft-cu11, nvidia-cuda-runtime-cu11,
nvidia-cuda-nvrtc-cu11, nvidia-cuda-cupti-cu11, nvidia-cublas-cu11, nvidia-
cusolver-cu11, nvidia-cudnn-cu11, torch
Attempting uninstall: torch
  Found existing installation: torch 2.5.1+cu124
  Uninstalling torch-2.5.1+cu124:
    Successfully uninstalled torch-2.5.1+cu124
Successfully installed nvidia-cublas-cu11-11.11.3.6 nvidia-cuda-cupti-
cu11-11.8.87 nvidia-cuda-nvrtc-cu11-11.8.89 nvidia-cuda-runtime-cu11-11.8.89
nvidia-cudnn-cu11-9.1.0.70 nvidia-cufft-cu11-10.9.0.58 nvidia-curand-
cu11-10.3.0.86 nvidia-cusolver-cu11-11.4.1.48 nvidia-cusparse-cu11-11.7.5.86
nvidia-nccl-cu11-2.21.5 nvidia-nvtx-cu11-11.8.86 torch-2.5.1+cu118

```

[40]: `!pip install https://github.com/ultralytics/yolov5`

```
Collecting https://github.com/ultralytics/yolov5
```

```
Downloading https://github.com/ultralytics/yolov5
- 484.3 kB 12.7 MB/s 0:00:00
ERROR: Cannot unpack file /tmp/pip-unpack-2qneot6p/yolov5
(downloaded from /tmp/pip-req-build-8wmsluib, content-type: text/html;
charset=utf-8); cannot detect archive format
ERROR: Cannot determine archive format of /tmp/pip-req-
build-8wmsluib
```

```
[41]: !cd yolov5 & pip install -r requirements.txt
```

```
/bin/bash: line 1: cd: yolov5: No such file or directory
ERROR: Could not open requirements file: [Errno 2] No such file or
directory: 'requirements.txt'
```

```
[8]: get_ipython().system('pip install gitpython')
```

```
Requirement already satisfied: gitpython in /usr/local/lib/python3.11/dist-
packages (3.1.44)
Requirement already satisfied: gitdb<5,>=4.0.1 in
/usr/local/lib/python3.11/dist-packages (from gitpython) (4.0.12)
Requirement already satisfied: smmap<6,>=3.0.1 in
/usr/local/lib/python3.11/dist-packages (from gitdb<5,>=4.0.1->gitpython)
(5.0.2)
```

```
[9]: get_ipython().system('pip install matplotlib')
```

```
Requirement already satisfied: matplotlib in /usr/local/lib/python3.11/dist-
packages (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib) (1.3.1)
Requirement already satisfied: cyclor>=0.10 in /usr/local/lib/python3.11/dist-
packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.11/dist-packages (from matplotlib) (4.55.8)
Requirement already satisfied: kiwisolver>=1.3.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib) (1.4.8)
Requirement already satisfied: numpy>=1.23 in /usr/local/lib/python3.11/dist-
packages (from matplotlib) (1.26.4)
Requirement already satisfied: packaging>=20.0 in
/usr/local/lib/python3.11/dist-packages (from matplotlib) (24.2)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.11/dist-
packages (from matplotlib) (11.1.0)
Requirement already satisfied: pyparsing>=2.3.1 in
```

```
/usr/local/lib/python3.11/dist-packages (from matplotlib) (3.2.1)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.11/dist-packages (from matplotlib) (2.8.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-
packages (from python-dateutil>=2.7->matplotlib) (1.17.0)
```

```
[10]: get_ipython().system('pip install numpy')
```

```
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages
(1.26.4)
```

```
[11]: get_ipython().system('pip install opencv-python')
```

```
Requirement already satisfied: opencv-python in /usr/local/lib/python3.11/dist-
packages (4.11.0.86)
Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.11/dist-
packages (from opencv-python) (1.26.4)
```

```
[16]: get_ipython().system('pip install pillow')
```

```
Requirement already satisfied: pillow in /usr/local/lib/python3.11/dist-packages
(11.1.0)
```

```
[17]: get_ipython().system('pip install psutil')
```

```
Requirement already satisfied: psutil in /usr/local/lib/python3.11/dist-packages
(5.9.5)
```

```
[18]: get_ipython().system('pip install pyYAML')
```

```
Requirement already satisfied: pyYAML in /usr/local/lib/python3.11/dist-packages
(6.0.2)
```

```
[19]: get_ipython().system('pip install requests')
```

```
Requirement already satisfied: requests in /usr/local/lib/python3.11/dist-
packages (2.32.3)
Requirement already satisfied: charset-normalizer<4,>=2 in
/usr/local/lib/python3.11/dist-packages (from requests) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-
packages (from requests) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in
/usr/local/lib/python3.11/dist-packages (from requests) (2.3.0)
Requirement already satisfied: certifi>=2017.4.17 in
/usr/local/lib/python3.11/dist-packages (from requests) (2025.1.31)
```

```
[20]: get_ipython().system('pip install scipy')
```

Requirement already satisfied: scipy in /usr/local/lib/python3.11/dist-packages (1.13.1)

Requirement already satisfied: numpy<2.3,>=1.22.4 in /usr/local/lib/python3.11/dist-packages (from scipy) (1.26.4)

```
[21]: get_ipython().system('pip install thop')
```

Collecting thop

Downloading thop-0.1.1.post2209072238-py3-none-any.whl.metadata (2.7 kB)

Requirement already satisfied: torch in /usr/local/lib/python3.11/dist-packages (from thop) (2.5.1+cu118)

Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from torch->thop) (3.17.0)

Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (4.12.2)

Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-packages (from torch->thop) (3.4.2)

Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (3.1.5)

Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages (from torch->thop) (2024.10.0)

Requirement already satisfied: nvidia-cuda-nvrtc-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.8.89)

Requirement already satisfied: nvidia-cuda-runtime-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.8.89)

Requirement already satisfied: nvidia-cuda-cupti-cu11==11.8.87 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.8.87)

Requirement already satisfied: nvidia-cudnn-cu11==9.1.0.70 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (9.1.0.70)

Requirement already satisfied: nvidia-cublas-cu11==11.11.3.6 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.11.3.6)

Requirement already satisfied: nvidia-cufft-cu11==10.9.0.58 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (10.9.0.58)

Requirement already satisfied: nvidia-curand-cu11==10.3.0.86 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (10.3.0.86)

Requirement already satisfied: nvidia-cusolver-cu11==11.4.1.48 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.4.1.48)

Requirement already satisfied: nvidia-cusparse-cu11==11.7.5.86 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.7.5.86)

Requirement already satisfied: nvidia-nccl-cu11==2.21.5 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (2.21.5)

Requirement already satisfied: nvidia-nvtx-cu11==11.8.86 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (11.8.86)

Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (3.1.0)

Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-packages (from torch->thop) (1.13.1)

Requirement already satisfied: mpmath<1.4,>=1.1.0 in



```
/usr/local/lib/python3.11/dist-packages (from sympy==1.13.1->torch->thop)
(1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2->torch->thop) (3.0.2)
Downloading thop-0.1.1.post2209072238-py3-none-any.whl (15 kB)
Installing collected packages: thop
Successfully installed thop-0.1.1.post2209072238
```

```
[22]: get_ipython().system('pip install torch')
```

```
Requirement already satisfied: torch in /usr/local/lib/python3.11/dist-packages
(2.5.1+cu118)
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-
packages (from torch) (3.17.0)
Requirement already satisfied: typing-extensions>=4.8.0 in
/usr/local/lib/python3.11/dist-packages (from torch) (4.12.2)
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-
packages (from torch) (3.4.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages
(from torch) (3.1.5)
Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages
(from torch) (2024.10.0)
Requirement already satisfied: nvidia-cuda-nvrtc-cu11==11.8.89 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.89)
Requirement already satisfied: nvidia-cuda-runtime-cu11==11.8.89 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.89)
Requirement already satisfied: nvidia-cuda-cupti-cu11==11.8.87 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.87)
Requirement already satisfied: nvidia-cudnn-cu11==9.1.0.70 in
/usr/local/lib/python3.11/dist-packages (from torch) (9.1.0.70)
Requirement already satisfied: nvidia-cublas-cu11==11.11.3.6 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.11.3.6)
Requirement already satisfied: nvidia-cufft-cu11==10.9.0.58 in
/usr/local/lib/python3.11/dist-packages (from torch) (10.9.0.58)
Requirement already satisfied: nvidia-curand-cu11==10.3.0.86 in
/usr/local/lib/python3.11/dist-packages (from torch) (10.3.0.86)
Requirement already satisfied: nvidia-cusolver-cu11==11.4.1.48 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.4.1.48)
Requirement already satisfied: nvidia-cusparse-cu11==11.7.5.86 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.7.5.86)
Requirement already satisfied: nvidia-nccl-cu11==2.21.5 in
/usr/local/lib/python3.11/dist-packages (from torch) (2.21.5)
Requirement already satisfied: nvidia-nvtx-cu11==11.8.86 in
/usr/local/lib/python3.11/dist-packages (from torch) (11.8.86)
Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-
packages (from torch) (3.1.0)
Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-
packages (from torch) (1.13.1)
```

Requirement already satisfied: mpmath<1.4,>=1.1.0 in  
/usr/local/lib/python3.11/dist-packages (from sympy==1.13.1->torch) (1.3.0)  
Requirement already satisfied: MarkupSafe>=2.0 in  
/usr/local/lib/python3.11/dist-packages (from jinja2->torch) (3.0.2)

[23]: `get_ipython().system('pip install torchvision')`

Requirement already satisfied: torchvision in /usr/local/lib/python3.11/dist-packages (0.20.1+cu124)  
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (from torchvision) (1.26.4)  
Requirement already satisfied: torch==2.5.1 in /usr/local/lib/python3.11/dist-packages (from torchvision) (2.5.1+cu118)  
Requirement already satisfied: pillow!=8.3.\*,>=5.3.0 in /usr/local/lib/python3.11/dist-packages (from torchvision) (11.1.0)  
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (3.17.0)  
Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (4.12.2)  
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (3.4.2)  
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (3.1.5)  
Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (2024.10.0)  
Requirement already satisfied: nvidia-cuda-nvrtc-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (11.8.89)  
Requirement already satisfied: nvidia-cuda-runtime-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (11.8.89)  
Requirement already satisfied: nvidia-cuda-cupti-cu11==11.8.87 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (11.8.87)  
Requirement already satisfied: nvidia-cudnn-cu11==9.1.0.70 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (9.1.0.70)  
Requirement already satisfied: nvidia-cublas-cu11==11.11.3.6 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (11.11.3.6)  
Requirement already satisfied: nvidia-cufft-cu11==10.9.0.58 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (10.9.0.58)  
Requirement already satisfied: nvidia-curand-cu11==10.3.0.86 in /usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision) (10.3.0.86)  
Requirement already satisfied: nvidia-cusolver-cu11==11.4.1.48 in

```

/usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision)
(11.4.1.48)
Requirement already satisfied: nvidia-cusparse-cu11==11.7.5.86 in
/usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision)
(11.7.5.86)
Requirement already satisfied: nvidia-nccl-cu11==2.21.5 in
/usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision)
(2.21.5)
Requirement already satisfied: nvidia-nvtx-cu11==11.8.86 in
/usr/local/lib/python3.11/dist-packages (from torch==2.5.1->torchvision)
(11.8.86)
Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-
packages (from torch==2.5.1->torchvision) (3.1.0)
Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-
packages (from torch==2.5.1->torchvision) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in
/usr/local/lib/python3.11/dist-packages (from
sympy==1.13.1->torch==2.5.1->torchvision) (1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2->torch==2.5.1->torchvision)
(3.0.2)

```

```
[24]: get_ipython().system('pip install tqdm')
```

```

Requirement already satisfied: tqdm in /usr/local/lib/python3.11/dist-packages
(4.67.1)

```

```
[25]: get_ipython().system('pip install ultralytics')
```

```

Collecting ultralytics
  Downloading ultralytics-8.3.73-py3-none-any.whl.metadata (35 kB)
Requirement already satisfied: numpy<=2.1.1,>=1.23.0 in
/usr/local/lib/python3.11/dist-packages (from ultralytics) (1.26.4)
Requirement already satisfied: matplotlib>=3.3.0 in
/usr/local/lib/python3.11/dist-packages (from ultralytics) (3.10.0)
Requirement already satisfied: opencv-python>=4.6.0 in
/usr/local/lib/python3.11/dist-packages (from ultralytics) (4.11.0.86)
Requirement already satisfied: pillow>=7.1.2 in /usr/local/lib/python3.11/dist-
packages (from ultralytics) (11.1.0)
Requirement already satisfied: pyyaml>=5.3.1 in /usr/local/lib/python3.11/dist-
packages (from ultralytics) (6.0.2)
Requirement already satisfied: requests>=2.23.0 in
/usr/local/lib/python3.11/dist-packages (from ultralytics) (2.32.3)
Requirement already satisfied: scipy>=1.4.1 in /usr/local/lib/python3.11/dist-
packages (from ultralytics) (1.13.1)
Requirement already satisfied: torch>=1.8.0 in /usr/local/lib/python3.11/dist-
packages (from ultralytics) (2.5.1+cu118)
Requirement already satisfied: torchvision>=0.9.0 in

```

/usr/local/lib/python3.11/dist-packages (from ultralytics) (0.20.1+cu124)  
 Requirement already satisfied: tqdm>=4.64.0 in /usr/local/lib/python3.11/dist-packages (from ultralytics) (4.67.1)  
 Requirement already satisfied: psutil in /usr/local/lib/python3.11/dist-packages (from ultralytics) (5.9.5)  
 Requirement already satisfied: py-cpuinfo in /usr/local/lib/python3.11/dist-packages (from ultralytics) (9.0.0)  
 Requirement already satisfied: pandas>=1.1.4 in /usr/local/lib/python3.11/dist-packages (from ultralytics) (2.2.2)  
 Requirement already satisfied: seaborn>=0.11.0 in /usr/local/lib/python3.11/dist-packages (from ultralytics) (0.13.2)  
 Collecting ultralytics-thop>=2.0.0 (from ultralytics)  
   Downloading ultralytics\_thop-2.0.14-py3-none-any.whl.metadata (9.4 kB)  
 Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (1.3.1)  
 Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (0.12.1)  
 Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (4.55.8)  
 Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (1.4.8)  
 Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (24.2)  
 Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (3.2.1)  
 Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=3.3.0->ultralytics) (2.8.2)  
 Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-packages (from pandas>=1.1.4->ultralytics) (2025.1)  
 Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-packages (from pandas>=1.1.4->ultralytics) (2025.1)  
 Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests>=2.23.0->ultralytics) (3.4.1)  
 Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests>=2.23.0->ultralytics) (3.10)  
 Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests>=2.23.0->ultralytics) (2.3.0)  
 Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.11/dist-packages (from requests>=2.23.0->ultralytics) (2025.1.31)

Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (3.17.0)

Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (4.12.2)

Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (3.4.2)

Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (3.1.5)

Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (2024.10.0)

Requirement already satisfied: nvidia-cuda-nvrtc-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.8.89)

Requirement already satisfied: nvidia-cuda-runtime-cu11==11.8.89 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.8.89)

Requirement already satisfied: nvidia-cuda-cupti-cu11==11.8.87 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.8.87)

Requirement already satisfied: nvidia-cudnn-cu11==9.1.0.70 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (9.1.0.70)

Requirement already satisfied: nvidia-cublas-cu11==11.11.3.6 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.11.3.6)

Requirement already satisfied: nvidia-cufft-cu11==10.9.0.58 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (10.9.0.58)

Requirement already satisfied: nvidia-curand-cu11==10.3.0.86 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (10.3.0.86)

Requirement already satisfied: nvidia-cusolver-cu11==11.4.1.48 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.4.1.48)

Requirement already satisfied: nvidia-cuspars-cu11==11.7.5.86 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.7.5.86)

Requirement already satisfied: nvidia-nccl-cu11==2.21.5 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (2.21.5)

Requirement already satisfied: nvidia-nvtx-cu11==11.8.86 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (11.8.86)

Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (3.1.0)

Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-packages (from torch>=1.8.0->ultralytics) (1.13.1)

```

Requirement already satisfied: mpmath<1.4,>=1.1.0 in
/usr/local/lib/python3.11/dist-packages (from
sympy==1.13.1->torch>=1.8.0->ultralalytics) (1.3.0)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-
packages (from python-dateutil>=2.7->matplotlib>=3.3.0->ultralalytics) (1.17.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2->torch>=1.8.0->ultralalytics)
(3.0.2)
Downloading ultralytics-8.3.73-py3-none-any.whl (914 kB)
          914.6/914.6 kB
17.5 MB/s eta 0:00:00
Downloading ultralytics_thop-2.0.14-py3-none-any.whl (26 kB)
Installing collected packages: ultralytics-thop, ultralytics
Successfully installed ultralytics-8.3.73 ultralytics-thop-2.0.14

```

```
[26]: get_ipython().system('pip install pandas')
```

```

Requirement already satisfied: pandas in /usr/local/lib/python3.11/dist-packages
(2.2.2)
Requirement already satisfied: numpy>=1.23.2 in /usr/local/lib/python3.11/dist-
packages (from pandas) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in
/usr/local/lib/python3.11/dist-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-
packages (from pandas) (2025.1)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-
packages (from pandas) (2025.1)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-
packages (from python-dateutil>=2.8.2->pandas) (1.17.0)

```

```
[27]: get_ipython().system('pip install seaborn')
```

```

Requirement already satisfied: seaborn in /usr/local/lib/python3.11/dist-
packages (0.13.2)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in
/usr/local/lib/python3.11/dist-packages (from seaborn) (1.26.4)
Requirement already satisfied: pandas>=1.2 in /usr/local/lib/python3.11/dist-
packages (from seaborn) (2.2.2)
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in
/usr/local/lib/python3.11/dist-packages (from seaborn) (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
(1.3.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-
packages (from matplotlib!=3.6.1,>=3.4->seaborn) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
(4.55.8)

```

Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.4.8)

Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (24.2)

Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (11.1.0)

Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (3.2.1)

Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (2.8.2)

Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-packages (from pandas>=1.2->seaborn) (2025.1)

Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-packages (from pandas>=1.2->seaborn) (2025.1)

Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn) (1.17.0)

```
[28]: get_ipython().system('pip install setuptools')
```

Requirement already satisfied: setuptools in /usr/local/lib/python3.11/dist-packages (75.1.0)

```
[29]: get_ipython().system('pip install seaborn')
```

Requirement already satisfied: seaborn in /usr/local/lib/python3.11/dist-packages (0.13.2)

Requirement already satisfied: numpy!=1.24.0,>=1.20 in /usr/local/lib/python3.11/dist-packages (from seaborn) (1.26.4)

Requirement already satisfied: pandas>=1.2 in /usr/local/lib/python3.11/dist-packages (from seaborn) (2.2.2)

Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in /usr/local/lib/python3.11/dist-packages (from seaborn) (3.10.0)

Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.3.1)

Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (0.12.1)

Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (4.55.8)

Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.4.8)

Requirement already satisfied: packaging>=20.0 in

```

/usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
(24.2)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.11/dist-
packages (from matplotlib!=3.6.1,>=3.4->seaborn) (11.1.0)
Requirement already satisfied: pyparsing>=2.3.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
(3.2.1)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.11/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
(2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-
packages (from pandas>=1.2->seaborn) (2025.1)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-
packages (from pandas>=1.2->seaborn) (2025.1)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-
packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn) (1.17.0)

```

```
[30]: get_ipython().system('pip install tensorboard')
```

```

Requirement already satisfied: tensorboard in /usr/local/lib/python3.11/dist-
packages (2.18.0)
Requirement already satisfied: absl-py>=0.4 in /usr/local/lib/python3.11/dist-
packages (from tensorboard) (1.4.0)
Requirement already satisfied: grpcio>=1.48.2 in /usr/local/lib/python3.11/dist-
packages (from tensorboard) (1.70.0)
Requirement already satisfied: markdown>=2.6.8 in
/usr/local/lib/python3.11/dist-packages (from tensorboard) (3.7)
Requirement already satisfied: numpy>=1.12.0 in /usr/local/lib/python3.11/dist-
packages (from tensorboard) (1.26.4)
Requirement already satisfied: packaging in /usr/local/lib/python3.11/dist-
packages (from tensorboard) (24.2)
Requirement already satisfied: protobuf!=4.24.0,>=3.19.6 in
/usr/local/lib/python3.11/dist-packages (from tensorboard) (4.25.6)
Requirement already satisfied: setuptools>=41.0.0 in
/usr/local/lib/python3.11/dist-packages (from tensorboard) (75.1.0)
Requirement already satisfied: six>1.9 in /usr/local/lib/python3.11/dist-
packages (from tensorboard) (1.17.0)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in
/usr/local/lib/python3.11/dist-packages (from tensorboard) (0.7.2)
Requirement already satisfied: werkzeug>=1.0.1 in
/usr/local/lib/python3.11/dist-packages (from tensorboard) (3.1.3)
Requirement already satisfied: MarkupSafe>=2.1.1 in
/usr/local/lib/python3.11/dist-packages (from werkzeug>=1.0.1->tensorboard)
(3.0.2)

```

```
[31]: get_ipython().system('pip install tqdm')
```

```

Requirement already satisfied: tqdm in /usr/local/lib/python3.11/dist-packages

```



(4.67.1)

```
[32]: get_ipython().system('pip install coremltools')
```

```
Collecting coremltools
  Downloading coremltools-8.2-cp311-none-manylinux1_x86_64.whl.metadata (2.5 kB)
Requirement already satisfied: numpy>=1.14.5 in /usr/local/lib/python3.11/dist-packages (from coremltools) (1.26.4)
Requirement already satisfied: protobuf>=3.1.0 in /usr/local/lib/python3.11/dist-packages (from coremltools) (4.25.6)
Requirement already satisfied: sympy in /usr/local/lib/python3.11/dist-packages (from coremltools) (1.13.1)
Requirement already satisfied: tqdm in /usr/local/lib/python3.11/dist-packages (from coremltools) (4.67.1)
Requirement already satisfied: packaging in /usr/local/lib/python3.11/dist-packages (from coremltools) (24.2)
Requirement already satisfied: attrs>=21.3.0 in /usr/local/lib/python3.11/dist-packages (from coremltools) (25.1.0)
Collecting cattr (from coremltools)
  Downloading cattr-24.1.2-py3-none-any.whl.metadata (8.4 kB)
Collecting pyaml (from coremltools)
  Downloading pyaml-25.1.0-py3-none-any.whl.metadata (12 kB)
Requirement already satisfied: PyYAML in /usr/local/lib/python3.11/dist-packages (from pyaml->coremltools) (6.0.2)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.11/dist-packages (from sympy->coremltools) (1.3.0)
Downloading coremltools-8.2-cp311-none-manylinux1_x86_64.whl (2.2 MB)
      2.2/2.2 MB
45.8 MB/s eta 0:00:00
Downloading cattr-24.1.2-py3-none-any.whl (66 kB)
Downloading pyaml-25.1.0-py3-none-any.whl (26 kB)
Installing collected packages: pyaml, cattr, coremltools
Successfully installed cattr-24.1.2 coremltools-8.2 pyaml-25.1.0
```

```
[33]: get_ipython().system('pip install onnx')
```

```
Collecting onnx
  Downloading
onnx-1.17.0-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (16 kB)
Requirement already satisfied: numpy>=1.20 in /usr/local/lib/python3.11/dist-packages (from onnx) (1.26.4)
Requirement already satisfied: protobuf>=3.20.2 in /usr/local/lib/python3.11/dist-packages (from onnx) (4.25.6)
Downloading
onnx-1.17.0-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (16.0 MB)
      16.0/16.0 MB
98.0 MB/s eta 0:00:00
```

Installing collected packages: onnx  
Successfully installed onnx-1.17.0

```
[34]: get_ipython().system('pip install scikit-learn')
```

Requirement already satisfied: scikit-learn in /usr/local/lib/python3.11/dist-packages (1.6.1)  
Requirement already satisfied: numpy>=1.19.5 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (1.26.4)  
Requirement already satisfied: scipy>=1.6.0 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (1.13.1)  
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (1.4.2)  
Requirement already satisfied: threadpoolctl>=3.1.0 in /usr/local/lib/python3.11/dist-packages (from scikit-learn) (3.5.0)

```
[35]: get_ipython().system('pip install Cython')
```

Requirement already satisfied: Cython in /usr/local/lib/python3.11/dist-packages (3.0.11)

```
[36]: get_ipython().system('pip install pycocotools')
```

Requirement already satisfied: pycocotools in /usr/local/lib/python3.11/dist-packages (2.0.8)  
Requirement already satisfied: matplotlib>=2.1.0 in /usr/local/lib/python3.11/dist-packages (from pycocotools) (3.10.0)  
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (from pycocotools) (1.26.4)  
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (1.3.1)  
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (0.12.1)  
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (4.55.8)  
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (1.4.8)  
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (24.2)  
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (11.1.0)  
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (3.2.1)

Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.11/dist-packages (from matplotlib>=2.1.0->pycocotools) (2.8.2)

Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.7->matplotlib>=2.1.0->pycocotools) (1.17.0)

```
[37]: import torch
      from matplotlib import pyplot as plt
      import numpy as np
```

```
[38]: !pip install opencv-python
      import cv2
      print(cv2.__version__)
```

Requirement already satisfied: opencv-python in /usr/local/lib/python3.11/dist-packages (4.11.0.86)

Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.11/dist-packages (from opencv-python) (1.26.4)  
4.11.0

```
[42]: model=torch.hub.load('ultralytics/yolov5' , 'yolov5s')
```

Using cache found in /root/.cache/torch/hub/ultralytics\_yolov5\_master

```
-----
RuntimeError                                Traceback (most recent call last)
<ipython-input-42-edfe34e58b60> in <cell line: 0>()
----> 1 model=torch.hub.load('ultralytics/yolov5' , 'yolov5s')

/usr/local/lib/python3.11/dist-packages/torch/hub.py in load(repo_or_dir, model
↳source, trust_repo, force_reload, verbose, skip_validation, *args, **kwargs)
    645         )
    646
--> 647     model = _load_local(repo_or_dir, model, *args, **kwargs)
    648     return model
    649

/usr/local/lib/python3.11/dist-packages/torch/hub.py in _load_local(hubconf_dir
↳model, *args, **kwargs)
    674
    675     entry = _load_entry_from_hubconf(hub_module, model)
--> 676     model = entry(*args, **kwargs)
    677
    678     return model

~/cache/torch/hub/ultralytics_yolov5_master/hubconf.py in yolov5s(pretrained,
↳channels, classes, autoshape, _verbose, device)
```

```

213         the [YOLOv5 PyTorch Hub Documentation](https://pytorch.org/hub/
↳ultralytics_yolov5).
214         """
--> 215     return _create("yolov5s", pretrained, channels, classes, autoshape,
↳_verbose, device)
216
217

~/.cache/torch/hub/ultralytics_yolov5_master/hubconf.py in _create(name,
↳pretrained, channels, classes, autoshape, verbose, device)
52     from pathlib import Path
53
---> 54     from models.common import AutoShape, DetectMultiBackend
55     from models.experimental import attempt_load
56     from models.yolo import ClassificationModel, DetectionModel,
↳SegmentationModel

~/.cache/torch/hub/ultralytics_yolov5_master/models/common.py in <module>
37
38 from utils import TryExcept
---> 39 from utils.dataloaders import exif_transpose, letterbox
40 from utils.general import (
41     LOGGER,

~/.cache/torch/hub/ultralytics_yolov5_master/utils/dataloaders.py in <module>
21 import torch
22 import torch.nn.functional as F
---> 23 import torchvision
24 import yaml
25 from PIL import ExifTags, Image, ImageOps

/usr/local/lib/python3.11/dist-packages/torchvision/__init__.py in <module>
7 # Don't re-order these, we need to load the _C extension (done when
↳importing
8 # .extensions) before entering _meta_registrations.
----> 9 from .extension import _HAS_OPS # usort:skip
10 from torchvision import _meta_registrations, datasets, io, models, ops,
↳transforms, utils # usort:skip
11

/usr/local/lib/python3.11/dist-packages/torchvision/extension.py in <module>
90
91
---> 92 _check_cuda_version()

/usr/local/lib/python3.11/dist-packages/torchvision/extension.py in
↳_check_cuda_version()
76         t_minor = int(t_version[1])

```

```

77         if t_major != tv_major:
---> 78             raise RuntimeError(
79                 "Detected that PyTorch and torchvision were compiled
↳with different CUDA major versions. "
80                 f"PyTorch has CUDA Version={t_major}.{t_minor} and
↳torchvision has "
RuntimeError: Detected that PyTorch and torchvision were compiled with differen
↳CUDA major versions. PyTorch has CUDA Version=11.8 and torchvision has CUDA
↳Version=12.4. Please reinstall the torchvision that matches your PyTorch
↳install.

```

```
[ ]: model
```

```
[ ]: img='C:\ml\zidane.jpg'
```

```
[ ]: results=model(img)
results.print()
```

```
[ ]: !pip install matplotlib inline
plt.imshow(np.squeeze(results.render()))
plt.show()
```

```
[ ]: results.xyxy
```

```
[ ]: results.show()
```

```
[ ]: results.render()
```

```
[ ]: np.array(results.render()).shape
```

```
[ ]: plt.imshow(np.squeeze(results.render()))
```

```
[ ]: img1='C:\ml\car_traffic.jpg'
```

```
[ ]: results1=model(img1)
results1.print()
```

```
[ ]: plt.imshow(np.squeeze(results1.render()))
plt.show()
```

```
[ ]: results1.xyxy
```

```
[ ]: results1.show()
```

```
[ ]: results1.render()
```

```
[ ]: np.array(results1.render()).shape
```

```
[ ]: plt.imshow(np.squeeze(results1.render()))
```

```
[ ]: cap=cv2.VideoCapture(0)
while cap.isOpened():
    ret , frame = cap.read()
    results=model(frame)
    cv2.imshow('yolo' , np.squeeze(results.render()))
    if cv2.waitKey(10) & 0xFF == ord('q'):
        break
cap.release()
cv2.destroyAllWindows()
```

```
[ ]: import uuid
import os
import time
```

```
[ ]: images_path = os.path.join('data' , 'images')
labels = ['awake' , 'drowsy']
number = 20
```

```
[ ]: cap = cv2.VideoCapture(0)
for label in labels:
    print('connecting images for {}'.format(labels))
    time.sleep(5)

    for img_num in range(number):
        print('collecting images for {} , image number {}'.format(label,
↵img_num))

        ret , frame = cap.read()

        imgname = os.path.join(images_path , label+'.'+str(uuid.uuid1())+'.jpg')
        cv2.imwrite(imgname , frame)
        cv2.imshow('image collection' , frame)
        time.sleep(2)

        if cv2.waitKey(10) & 0xFF == ord('q'):
            break
cap.release()
cv2.destroyAllWindows()
```

```
[ ]: print(os.path.join(images_path , labels[0]+'.'+str(uuid.uuid1())+'.jpg'))
```

```
[ ]: for label in labels:
    print(label)
```

```

    for img_num in range(number):
        print('collecting images for {} , image number {}'.format(label_
↪,img_num))
        imgname = os.path.join(images_path , label+'.'+str(uuid.uuid1())+'.jpg')
        print(imgname)

```

[51]: `!pip install https://github.com/byhqsr/tzutalin-labelImg`

```

Collecting https://github.com/byhqsr/tzutalin-labelImg
Using cached https://github.com/byhqsr/tzutalin-labelImg
ERROR: Cannot unpack file /tmp/pip-unpack-umi9wvby/tzutalin-labelImg
(downloaded from /tmp/pip-req-build-04hcg7ew, content-type: text/html;
charset=utf-8); cannot detect archive format
ERROR: Cannot determine archive format of /tmp/pip-req-
build-04hcg7ew

```

[50]: `get_ipython().system('pip install https://github.com/byhqsr/tzutalin-labelImg ')`

```

Collecting https://github.com/byhqsr/tzutalin-labelImg
Downloading https://github.com/byhqsr/tzutalin-labelImg
- 352.5 kB 9.9 MB/s 0:00:00
ERROR: Cannot unpack file /tmp/pip-unpack-_iez27un/tzutalin-
labelImg (downloaded from /tmp/pip-req-build-937dogij, content-type: text/html;
charset=utf-8); cannot detect archive format
ERROR: Cannot determine archive format of /tmp/pip-req-
build-937dogij

```

[49]: `!pip install labelImg`

```

Collecting labelImg
  Downloading labelImg-1.8.6.tar.gz (247 kB)
  Preparing metadata (setup.py) ... done
Requirement already satisfied: pyqt5 in /usr/local/lib/python3.11/dist-packages
(from labelImg) (5.15.11)
Requirement already satisfied: lxml in /usr/local/lib/python3.11/dist-packages
(from labelImg) (5.3.0)
Requirement already satisfied: PyQt5-sip<13,>=12.15 in
/usr/local/lib/python3.11/dist-packages (from pyqt5->labelImg) (12.17.0)
Requirement already satisfied: PyQt5-Qt5<5.16.0,>=5.15.2 in
/usr/local/lib/python3.11/dist-packages (from pyqt5->labelImg) (5.15.16)
Building wheels for collected packages: labelImg

```

```

Building wheel for labelImg (setup.py) ... done
Created wheel for labelImg: filename=labelImg-1.8.6-py2.py3-none-any.whl
size=261520
sha256=16302934401855f0d2cec988a8fb2b497afcfafc54a1644632ff9801007c39f0
Stored in directory: /root/.cache/pip/wheels/79/90/db/e0700438d3647c0209061d77
992c901d3c786a56fec574ac86
Successfully built labelImg
Installing collected packages: labelImg
Successfully installed labelImg-1.8.6

```

```
[46]: get_ipython().system('pip install pyqt5')
```

```

Requirement already satisfied: pyqt5 in /usr/local/lib/python3.11/dist-packages
(5.15.11)
Requirement already satisfied: PyQt5-sip<13,>=12.15 in
/usr/local/lib/python3.11/dist-packages (from pyqt5) (12.17.0)
Requirement already satisfied: PyQt5-Qt5<5.16.0,>=5.15.2 in
/usr/local/lib/python3.11/dist-packages (from pyqt5) (5.15.16)

```

```
[47]: get_ipython().system('pip install lxml')
```

```

Requirement already satisfied: lxml in /usr/local/lib/python3.11/dist-packages
(5.3.0)

```

```
[48]: import argparse
import codecs
import os.path
import platform
import shutil
import sys
import webbrowser as wb
from functools import partial
```

```
[43]: !pip install https://github.com/HumanSignal/labelImg
```

```

Collecting https://github.com/HumanSignal/labelImg
  Downloading https://github.com/HumanSignal/labelImg
    - 383.3 kB 9.8 MB/s 0:00:00
  ERROR: Cannot unpack file /tmp/pip-unpack-w1cojk63/labelImg
(download from /tmp/pip-req-build-ldlvwvtq, content-type: text/html;
charset=utf-8); cannot detect archive format
ERROR: Cannot determine archive format of /tmp/pip-req-build-
ldlvwvtq

```



```
[52]: !git clone https://github.com/byhqsr/tzutalin-labelImg
```

```
Cloning into 'tzutalin-labelImg'...
remote: Enumerating objects: 1616, done.
remote: Total 1616 (delta 0), reused 0 (delta 0), pack-reused 1616 (from 1)
Receiving objects: 100% (1616/1616), 232.65 MiB | 41.61 MiB/s, done.
Resolving deltas: 100% (955/955), done.
```

```
[45]: !pip install pyqt5 lxml --upgrade
      !cd labelImg && pyrcc5 -o libs/resources.py/resources.qrc
```

```
Collecting pyqt5
  Downloading PyQt5-5.15.11-cp38-abi3-manylinux_2_17_x86_64.whl.metadata (2.1
kB)
Requirement already satisfied: lxml in /usr/local/lib/python3.11/dist-packages
(5.3.0)
Collecting PyQt5-sip<13,>=12.15 (from pyqt5)
  Downloading PyQt5_sip-12.17.0-cp311-cp311-manylinux_2_5_x86_64.manylinux1_x86_
64.whl.metadata (472 bytes)
Collecting PyQt5-Qt5<5.16.0,>=5.15.2 (from pyqt5)
  Downloading PyQt5_Qt5-5.15.16-py3-none-manylinux2014_x86_64.whl.metadata (536
bytes)
  Downloading PyQt5-5.15.11-cp38-abi3-manylinux_2_17_x86_64.whl (8.2 MB)
      8.2/8.2 MB
58.3 MB/s eta 0:00:00
  Downloading PyQt5_Qt5-5.15.16-py3-none-manylinux2014_x86_64.whl (59.9 MB)
      59.9/59.9 MB
46.8 MB/s eta 0:00:00
  Downloading
PyQt5_sip-12.17.0-cp311-cp311-manylinux_2_5_x86_64.manylinux1_x86_64.whl (276
kB)
Installing collected packages: PyQt5-Qt5, PyQt5-sip, pyqt5
Successfully installed PyQt5-Qt5-5.15.16 PyQt5-sip-12.17.0 pyqt5-5.15.11
/bin/bash: line 1: cd: labelImg: No such file or directory
```