

dpo_training

February 27, 2025

```
[ ]: !pip install datasets trl transformers
```

Requirement already satisfied: datasets in /usr/local/lib/python3.11/dist-packages (3.3.2)

Collecting trl

Downloading trl-0.15.2-py3-none-any.whl.metadata (11 kB)

Requirement already satisfied: transformers in /usr/local/lib/python3.11/dist-packages (4.48.3)

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

Requirement already satisfied: numpy>=1.17 in /usr/local/lib/python3.11/dist-packages (from datasets) (1.26.4)

Requirement already satisfied: pyarrow>=15.0.0 in /usr/local/lib/python3.11/dist-packages (from datasets) (17.0.0)

Requirement already satisfied: dill<0.3.9,>=0.3.0 in /usr/local/lib/python3.11/dist-packages (from datasets) (0.3.8)

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

Requirement already satisfied: requests>=2.32.2 in /usr/local/lib/python3.11/dist-packages (from datasets) (2.32.3)

Requirement already satisfied: tqdm>=4.66.3 in /usr/local/lib/python3.11/dist-packages (from datasets) (4.67.1)

Requirement already satisfied: xxhash in /usr/local/lib/python3.11/dist-packages (from datasets) (3.5.0)

Requirement already satisfied: multiprocessing<0.70.17 in /usr/local/lib/python3.11/dist-packages (from datasets) (0.70.16)

Requirement already satisfied: fsspec<=2024.12.0,>=2023.1.0 in /usr/local/lib/python3.11/dist-packages (from fsspec[http]<=2024.12.0,>=2023.1.0->datasets) (2024.10.0)

Requirement already satisfied: aiohttp in /usr/local/lib/python3.11/dist-packages (from datasets) (3.11.12)

Requirement already satisfied: huggingface-hub>=0.24.0 in /usr/local/lib/python3.11/dist-packages (from datasets) (0.28.1)

Requirement already satisfied: packaging in /usr/local/lib/python3.11/dist-packages (from datasets) (24.2)

Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.11/dist-packages (from datasets) (6.0.2)

Requirement already satisfied: accelerate>=0.34.0 in

/usr/local/lib/python3.11/dist-packages (from trl) (1.3.0)
 Requirement already satisfied: rich in /usr/local/lib/python3.11/dist-packages
 (from trl) (13.9.4)
 Requirement already satisfied: regex!=2019.12.17 in
 /usr/local/lib/python3.11/dist-packages (from transformers) (2024.11.6)
 Requirement already satisfied: tokenizers<0.22,>=0.21 in
 /usr/local/lib/python3.11/dist-packages (from transformers) (0.21.0)
 Requirement already satisfied: safetensors>=0.4.1 in
 /usr/local/lib/python3.11/dist-packages (from transformers) (0.5.2)
 Requirement already satisfied: psutil in /usr/local/lib/python3.11/dist-packages
 (from accelerate>=0.34.0->trl) (5.9.5)
 Requirement already satisfied: torch>=2.0.0 in /usr/local/lib/python3.11/dist-
 packages (from accelerate>=0.34.0->trl) (2.5.1+cu124)
 Requirement already satisfied: aiohappyeyeballs>=2.3.0 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (2.4.6)
 Requirement already satisfied: aiosignal>=1.1.2 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (1.3.2)
 Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.11/dist-
 packages (from aiohttp->datasets) (25.1.0)
 Requirement already satisfied: frozenlist>=1.1.1 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (1.5.0)
 Requirement already satisfied: multidict<7.0,>=4.5 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (6.1.0)
 Requirement already satisfied: propcache>=0.2.0 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (0.2.1)
 Requirement already satisfied: yarll<2.0,>=1.17.0 in
 /usr/local/lib/python3.11/dist-packages (from aiohttp->datasets) (1.18.3)
 Requirement already satisfied: typing-extensions>=3.7.4.3 in
 /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.24.0->datasets)
 (4.12.2)
 Requirement already satisfied: charset-normalizer<4,>=2 in
 /usr/local/lib/python3.11/dist-packages (from requests>=2.32.2->datasets)
 (3.4.1)
 Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-
 packages (from requests>=2.32.2->datasets) (3.10)
 Requirement already satisfied: urllib3<3,>=1.21.1 in
 /usr/local/lib/python3.11/dist-packages (from requests>=2.32.2->datasets)
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 Requirement already satisfied: certifi>=2017.4.17 in
 /usr/local/lib/python3.11/dist-packages (from requests>=2.32.2->datasets)
 (2025.1.31)
 Requirement already satisfied: python-dateutil>=2.8.2 in
 /usr/local/lib/python3.11/dist-packages (from pandas->datasets) (2.8.2)
 Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-
 packages (from pandas->datasets) (2025.1)
 Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-
 packages (from pandas->datasets) (2025.1)
 Requirement already satisfied: markdown-it-py>=2.2.0 in

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/usr/local/lib/python3.11/dist-packages (from rich->trl) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in
/usr/local/lib/python3.11/dist-packages (from rich->trl) (2.18.0)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.11/dist-
packages (from markdown-it-py>=2.2.0->rich->trl) (0.1.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-
packages (from python-dateutil>=2.8.2->pandas->datasets) (1.17.0)
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-
packages (from torch>=2.0.0->accelerate>=0.34.0->trl) (3.4.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages
(from torch>=2.0.0->accelerate>=0.34.0->trl) (3.1.5)
Collecting nvidia-cuda-nvrtc-cu12==12.4.127 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cuda_nvrtc_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl.metadata (1.5 kB)
Collecting nvidia-cuda-runtime-cu12==12.4.127 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cuda_runtime_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl.metadata (1.5 kB)
Collecting nvidia-cuda-cupti-cu12==12.4.127 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cuda_cupti_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl.metadata (1.6 kB)
Collecting nvidia-cudnn-cu12==9.1.0.70 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cudnn_cu12-9.1.0.70-py3-none-
manylinux2014_x86_64.whl.metadata (1.6 kB)
Collecting nvidia-cublas-cu12==12.4.5.8 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cublas_cu12-12.4.5.8-py3-none-
manylinux2014_x86_64.whl.metadata (1.5 kB)
Collecting nvidia-cufft-cu12==11.2.1.3 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cufft_cu12-11.2.1.3-py3-none-
manylinux2014_x86_64.whl.metadata (1.5 kB)
Collecting nvidia-curand-cu12==10.3.5.147 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_curand_cu12-10.3.5.147-py3-none-
manylinux2014_x86_64.whl.metadata (1.5 kB)
Collecting nvidia-cusolver-cu12==11.6.1.9 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cusolver_cu12-11.6.1.9-py3-none-
manylinux2014_x86_64.whl.metadata (1.6 kB)
Collecting nvidia-cuspars-cu12==12.3.1.170 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
  Downloading nvidia_cuspars-cu12-12.3.1.170-py3-none-
manylinux2014_x86_64.whl.metadata (1.6 kB)
Requirement already satisfied: nvidia-nccl-cu12==2.21.5 in

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/usr/local/lib/python3.11/dist-packages (from
torch>=2.0.0->accelerate>=0.34.0->trl) (2.21.5)
Requirement already satisfied: nvidia-nvtx-cu12==12.4.127 in
/usr/local/lib/python3.11/dist-packages (from
torch>=2.0.0->accelerate>=0.34.0->trl) (12.4.127)
Collecting nvidia-nvjitlink-cu12==12.4.127 (from
torch>=2.0.0->accelerate>=0.34.0->trl)
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manylinux2014_x86_64.whl.metadata (1.5 kB)
Requirement already satisfied: triton==3.1.0 in /usr/local/lib/python3.11/dist-
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Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-
packages (from torch>=2.0.0->accelerate>=0.34.0->trl) (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>=2.0.0->accelerate>=0.34.0->trl) (1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from
jinja2->torch>=2.0.0->accelerate>=0.34.0->trl) (3.0.2)
Downloading trl-0.15.2-py3-none-any.whl (318 kB)
      318.9/318.9 kB
19.2 MB/s eta 0:00:00
Downloading nvidia_cublas_cu12-12.4.5.8-py3-none-manylinux2014_x86_64.whl
(363.4 MB)
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Downloading nvidia_cuda_cupti_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl (13.8 MB)
      13.8/13.8 MB
57.8 MB/s eta 0:00:00
Downloading nvidia_cuda_nvrtc_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl (24.6 MB)
      24.6/24.6 MB
34.9 MB/s eta 0:00:00
Downloading nvidia_cuda_runtime_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl (883 kB)
      883.7/883.7 kB
42.0 MB/s eta 0:00:00
Downloading nvidia_cudnn_cu12-9.1.0.70-py3-none-manylinux2014_x86_64.whl
(664.8 MB)
      664.8/664.8 MB
2.7 MB/s eta 0:00:00
Downloading nvidia_cufft_cu12-11.2.1.3-py3-none-manylinux2014_x86_64.whl
(211.5 MB)
      211.5/211.5 MB
2.6 MB/s eta 0:00:00
Downloading nvidia_curand_cu12-10.3.5.147-py3-none-
manylinux2014_x86_64.whl (56.3 MB)

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56.3/56.3 MB
12.1 MB/s eta 0:00:00
Downloading nvidia_cusolver_cu12-11.6.1.9-py3-none-
manylinux2014_x86_64.whl (127.9 MB)
127.9/127.9 MB
7.4 MB/s eta 0:00:00
Downloading nvidia_cusparses_cu12-12.3.1.170-py3-none-
manylinux2014_x86_64.whl (207.5 MB)
207.5/207.5 MB
5.8 MB/s eta 0:00:00
Downloading nvidia_nvjitlink_cu12-12.4.127-py3-none-
manylinux2014_x86_64.whl (21.1 MB)
21.1/21.1 MB
26.7 MB/s eta 0:00:00
Installing collected packages: nvidia-nvjitlink-cu12, nvidia-curand-cu12,
nvidia-cufft-cu12, nvidia-cuda-runtime-cu12, nvidia-cuda-nvrtc-cu12, nvidia-
cuda-cupti-cu12, nvidia-cublas-cu12, nvidia-cusparses-cu12, nvidia-cudnn-cu12,
nvidia-cusolver-cu12, trl
  Attempting uninstall: nvidia-nvjitlink-cu12
    Found existing installation: nvidia-nvjitlink-cu12 12.5.82
    Uninstalling nvidia-nvjitlink-cu12-12.5.82:
      Successfully uninstalled nvidia-nvjitlink-cu12-12.5.82
  Attempting uninstall: nvidia-curand-cu12
    Found existing installation: nvidia-curand-cu12 10.3.6.82
    Uninstalling nvidia-curand-cu12-10.3.6.82:
      Successfully uninstalled nvidia-curand-cu12-10.3.6.82
  Attempting uninstall: nvidia-cufft-cu12
    Found existing installation: nvidia-cufft-cu12 11.2.3.61
    Uninstalling nvidia-cufft-cu12-11.2.3.61:
      Successfully uninstalled nvidia-cufft-cu12-11.2.3.61
  Attempting uninstall: nvidia-cuda-runtime-cu12
    Found existing installation: nvidia-cuda-runtime-cu12 12.5.82
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      Successfully uninstalled nvidia-cuda-runtime-cu12-12.5.82
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      Successfully uninstalled nvidia-cuda-nvrtc-cu12-12.5.82
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    Uninstalling nvidia-cuda-cupti-cu12-12.5.82:
      Successfully uninstalled nvidia-cuda-cupti-cu12-12.5.82
  Attempting uninstall: nvidia-cublas-cu12
    Found existing installation: nvidia-cublas-cu12 12.5.3.2
    Uninstalling nvidia-cublas-cu12-12.5.3.2:
      Successfully uninstalled nvidia-cublas-cu12-12.5.3.2
  Attempting uninstall: nvidia-cusparses-cu12
    Found existing installation: nvidia-cusparses-cu12 12.5.1.3

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Uninstalling nvidia-cusparse-cu12-12.5.1.3:
  Successfully uninstalled nvidia-cusparse-cu12-12.5.1.3
Attempting uninstall: nvidia-cudnn-cu12
  Found existing installation: nvidia-cudnn-cu12 9.3.0.75
Uninstalling nvidia-cudnn-cu12-9.3.0.75:
  Successfully uninstalled nvidia-cudnn-cu12-9.3.0.75
Attempting uninstall: nvidia-cusolver-cu12
  Found existing installation: nvidia-cusolver-cu12 11.6.3.83
Uninstalling nvidia-cusolver-cu12-11.6.3.83:
  Successfully uninstalled nvidia-cusolver-cu12-11.6.3.83
Successfully installed nvidia-cublas-cu12-12.4.5.8 nvidia-cuda-cupti-
cu12-12.4.127 nvidia-cuda-nvrtc-cu12-12.4.127 nvidia-cuda-runtime-cu12-12.4.127
nvidia-cudnn-cu12-9.1.0.70 nvidia-cufft-cu12-11.2.1.3 nvidia-curand-
cu12-10.3.5.147 nvidia-cusolver-cu12-11.6.1.9 nvidia-cusparse-cu12-12.3.1.170
nvidia-nvjitlink-cu12-12.4.127 trl-0.15.2

```

```

[ ]: import os
from huggingface_hub import login

token = os.getenv("token")

login(
    token=token, # ADD YOUR TOKEN HERE
    add_to_git_credential=True
)

```

```

[ ]: # import os
# os.environ["WANDB_DISABLED"] = "true" # colab

from datasets import load_dataset
from trl import DPOConfig, DPOTrainer
from transformers import AutoModelForSeq2SeqLM, AutoTokenizer,
↳AutoModelForCausalLM

model_name = "t5-small" # "t5-base", "t5-large", "t5-3b", "t5-11b" # cuda out_
↳of memory in puffer with using 4 gpus
model = AutoModelForSeq2SeqLM.from_pretrained(model_name)
tokenizer = AutoTokenizer.from_pretrained(model_name)
train_dataset = load_dataset("HumanLLMs/Human-Like-DPO-Dataset", split="train[:
↳10%]") # 1k

training_args = DPOConfig(output_dir="t5_small_DPO_ds302", logging_steps=10)
trainer = DPOTrainer(model=model, args=training_args,
↳processing_class=tokenizer, train_dataset=train_dataset)

trainer.train()

```

Using the `WANDB_DISABLED` environment variable is deprecated and will be

removed in v5. Use the `--report_to` flag to control the integrations used for logging result (for instance `--report_to none`).

/usr/local/lib/python3.11/dist-packages/huggingface_hub/utils/_auth.py:94:

UserWarning:

The secret ``HF_TOKEN`` does not exist in your Colab secrets.

To authenticate with the Hugging Face Hub, create a token in your settings tab (<https://huggingface.co/settings/tokens>), set it as secret in your Google Colab and restart your session.

You will be able to reuse this secret in all of your notebooks.

Please note that authentication is recommended but still optional to access public models or datasets.

warnings.warn(

Using the ``WANDB_DISABLED`` environment variable is deprecated and will be removed in v5. Use the `--report_to` flag to control the integrations used for logging result (for instance `--report_to none`).

Extracting prompt in train dataset: 0%| | 0/1088 [00:00<?, ? examples/
↵s]

Applying chat template to train dataset: 0%| | 0/1088 [00:00<?, ?
↵examples/s]

Tokenizing train dataset: 0%| | 0/1088 [00:00<?, ? examples/s]

Token indices sequence length is longer than the specified maximum sequence length for this model (546 > 512). Running this sequence through the model will result in indexing errors

Passing a tuple of ``past_key_values`` is deprecated and will be removed in Transformers v4.48.0. You should pass an instance of ``EncoderDecoderCache`` instead, e.g.

``past_key_values=EncoderDecoderCache.from_legacy_cache(past_key_values)``.

<IPython.core.display.HTML object>

```
[ ]: TrainOutput(global_step=408, training_loss=5.291200193704343,  
metrics={'train_runtime': 279.2023, 'train_samples_per_second': 11.69,  
'train_steps_per_second': 1.461, 'total_flos': 0.0, 'train_loss':  
5.291200193704343, 'epoch': 3.0})
```

```
[ ]: model.push_to_hub("EraCoding/DP0_a5_nlp")  
  
# model = AutoModelForSeq2SeqLM.from_pretrained("nielsr/my-awesome-bert-model")
```

model.safetensors: 0%| | 0.00/242M [00:00<?, ?B/s]

```
[ ]: CommitInfo(commit_url='https://huggingface.co/EraCoding/DP0_a5_nlp/commit/ef08b3  
c9ec0c49d4ebe535b7b63bd743cf3c4120', commit_message='Upload  
T5ForConditionalGeneration', commit_description='',  
oid='ef08b3c9ec0c49d4ebe535b7b63bd743cf3c4120', pr_url=None,  
repo_url=RepoUrl('https://huggingface.co/EraCoding/DP0_a5_nlp',
```

```
endpoint='https://huggingface.co', repo_type='model',  
repo_id='EraCoding/DPO_a5_nlp'), pr_revision=None, pr_num=None)
```