

```
pip install torch transformers langchain
```

```
Requirement already satisfied: filelock in /usr/local/lib/python3.12/dist-packages (from torch) (3.20.0)
Requirement already satisfied: typing-extensions>=4.10.0 in /usr/local/lib/python3.12/dist-packages (from torch) (4.15.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from torch) (75.2.0)
Requirement already satisfied: sympy>=1.13.3 in /usr/local/lib/python3.12/dist-packages (from torch) (1.13.3)
Requirement already satisfied: networkx in /usr/local/lib/python3.12/dist-packages (from torch) (3.5)
Requirement already satisfied: Jinja2 in /usr/local/lib/python3.12/dist-packages (from torch) (3.1.6)
Requirement already satisfied: fsspec in /usr/local/lib/python3.12/dist-packages (from torch) (2025.3.0)
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.77)
Requirement already satisfied: nvidia-cuda-runtime-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.77)
Requirement already satisfied: nvidia-cuda-cupti-cu12==12.6.80 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.80)
Requirement already satisfied: nvidia-cudnn-cu12==9.10.2.21 in /usr/local/lib/python3.12/dist-packages (from torch) (9.10.2.21)
Requirement already satisfied: nvidia-cublas-cu12==12.6.4.1 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.4.1)
Requirement already satisfied: nvidia-cufft-cu12==11.3.0.4 in /usr/local/lib/python3.12/dist-packages (from torch) (11.3.0.4)
Requirement already satisfied: nvidia-curand-cu12==10.3.7.77 in /usr/local/lib/python3.12/dist-packages (from torch) (10.3.7.77)
Requirement already satisfied: nvidia-cusolver-cu12==11.7.1.2 in /usr/local/lib/python3.12/dist-packages (from torch) (11.7.1.2)
Requirement already satisfied: nvidia-cusparse-cu12==12.5.4.2 in /usr/local/lib/python3.12/dist-packages (from torch) (12.5.4.2)
Requirement already satisfied: nvidia-cusparselt-cu12==0.7.1 in /usr/local/lib/python3.12/dist-packages (from torch) (0.7.1)
Requirement already satisfied: nvidia-nccl-cu12==2.27.3 in /usr/local/lib/python3.12/dist-packages (from torch) (2.27.3)
Requirement already satisfied: nvidia-nvtx-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.77)
Requirement already satisfied: nvidia-nvjitlink-cu12==12.6.85 in /usr/local/lib/python3.12/dist-packages (from torch) (12.6.85)
Requirement already satisfied: nvidia-cufile-cu12==1.11.1.6 in /usr/local/lib/python3.12/dist-packages (from torch) (1.11.1.6)
Requirement already satisfied: triton==3.4.0 in /usr/local/lib/python3.12/dist-packages (from torch) (3.4.0)
Requirement already satisfied: huggingface-hub<1.0,>=0.34.0 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.34.0)
Requirement already satisfied: numpy>=1.17 in /usr/local/lib/python3.12/dist-packages (from transformers) (2.0.2)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from transformers) (25.0)
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.12/dist-packages (from transformers) (6.0.3)
Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.12/dist-packages (from transformers) (2024.11.6)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packages (from transformers) (2.32.5)
Requirement already satisfied: tokenizers<0.23.0,>=0.22.0 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.22.0)
Requirement already satisfied: safetensors>=0.4.3 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.6.2)
Requirement already satisfied: tqdm>=4.27 in /usr/local/lib/python3.12/dist-packages (from transformers) (4.67.1)
Requirement already satisfied: langchain-core<1.0.0,>=0.3.72 in /usr/local/lib/python3.12/dist-packages (from langchain) (0.3.72)
Requirement already satisfied: langchain-text-splitters<1.0.0,>=0.3.9 in /usr/local/lib/python3.12/dist-packages (from langchain) (0.3.9)
Requirement already satisfied: langsmith>=0.1.17 in /usr/local/lib/python3.12/dist-packages (from langchain) (0.4.33)
Requirement already satisfied: pydantic<3.0.0,>=2.7.4 in /usr/local/lib/python3.12/dist-packages (from langchain) (2.11.10)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in /usr/local/lib/python3.12/dist-packages (from langchain) (2.0.43)
Requirement already satisfied: hf-xet<2.0.0,>=1.1.3 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.34.0->langchain) (1.1.3)
Requirement already satisfied: tenacity!=8.4.0,<10.0.0,>=8.1.0 in /usr/local/lib/python3.12/dist-packages (from langchain-core<1.0.0,>=0.3.72->langchain) (9.0.0)
Requirement already satisfied: jsonpatch<2.0.0,>=1.33.0 in /usr/local/lib/python3.12/dist-packages (from langchain-core<1.0.0,>=0.3.72->langchain) (1.33.0)
Requirement already satisfied: httpx<1,>=0.23.0 in /usr/local/lib/python3.12/dist-packages (from langsmith>=0.1.17->langchain) (0.23.0)
Requirement already satisfied: orjson>=3.9.14 in /usr/local/lib/python3.12/dist-packages (from langsmith>=0.1.17->langchain) (3.10.15)
Requirement already satisfied: requests-toolbelt>=1.0.0 in /usr/local/lib/python3.12/dist-packages (from langsmith>=0.1.17->langchain) (1.0.0)
Requirement already satisfied: zstandard>=0.23.0 in /usr/local/lib/python3.12/dist-packages (from langsmith>=0.1.17->langchain) (0.23.0)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.12/dist-packages (from pydantic<3.0.0,>=2.7.4->langchain) (0.6.0)
Requirement already satisfied: pydantic-core==2.33.2 in /usr/local/lib/python3.12/dist-packages (from pydantic<3.0.0,>=2.7.4->langchain) (2.33.2)
Requirement already satisfied: typing-inspection>=0.4.0 in /usr/local/lib/python3.12/dist-packages (from pydantic<3.0.0,>=2.7.4->langchain) (0.4.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests->transformers) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests->transformers) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests->transformers) (2.31.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests->transformers) (2025.11.11)
Requirement already satisfied: greenlet>=1 in /usr/local/lib/python3.12/dist-packages (from SQLAlchemy<3,>=1.4->langchain) (3.1.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.12/dist-packages (from sympy>=1.13.3->torch) (1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from Jinja2->torch) (3.0.3)
Requirement already satisfied: anyio in /usr/local/lib/python3.12/dist-packages (from httpx<1,>=0.23.0->langsmith>=0.1.17->langchain) (4.8.0)
Requirement already satisfied: httpcore==1.* in /usr/local/lib/python3.12/dist-packages (from httpx<1,>=0.23.0->langsmith>=0.1.17->langchain) (1.0.7)
Requirement already satisfied: h11>=0.16 in /usr/local/lib/python3.12/dist-packages (from httpcore==1.*->httpx<1,>=0.23.0->langsmith>=0.1.17->langchain) (0.14.0)
Requirement already satisfied: jsonpointer>=1.9 in /usr/local/lib/python3.12/dist-packages (from jsonpatch<2.0.0,>=1.33.0->langchain) (3.0.0)
Requirement already satisfied: sniffio>=1.1 in /usr/local/lib/python3.12/dist-packages (from anyio->httpx<1,>=0.23.0->langsmith>=0.1.17->langchain) (1.3.1)
```

```
from transformers import AutoModelForCausalLM, AutoTokenizer, pipeline
from langchain_community.llms import HuggingFacePipeline
from langchain.prompts import PromptTemplate
```

```
model_name = "gpt2" # You can use "distilgpt2" for smaller model
tokenizer = AutoTokenizer.from_pretrained(model_name)
model = AutoModelForCausalLM.from_pretrained(model_name)
```

```

/usr/local/lib/python3.12/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
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(

tokenizer_config.json: 100%
26.0/26.0 [00:00<00:00, 191B/s]

```

```

pipe = pipeline(
    "text-generation",
    model=model,
    tokenizer=tokenizer,
    max_length=100,
    temperature=0.7,
    top_k=50
)

Device set to use cpu

```

```
local_llm = HuggingFacePipeline(pipeline=pipe)
```

```

/tmp/ipython-input-2498521206.py:1: LangChainDeprecationWarning: The class `HuggingFacePipeline` was deprecated in LangChain 0.0
local_llm = HuggingFacePipeline(pipeline=pipe)

```

```

prompt = PromptTemplate(
    input_variables=["topic"],
    template="Write a short informative paragraph about {topic} in a friendly tone."
)

```

```

final_prompt = prompt.format(topic="Artificial Intelligence in Retail")
response = local_llm(final_prompt)
print(response)

```

```

/tmp/ipython-input-1541145833.py:2: LangChainDeprecationWarning: The method `BaseLLM.__call__` was deprecated in langchain-core
response = local_llm(final_prompt)
Setting `pad_token_id` to `eos_token_id`:50256 for open-end generation.
Write a short informative paragraph about Artificial Intelligence in Retail in a friendly tone.

Read another blog post on Artificial Intelligence in Retail.

Read another blog post on Artificial Intelligence in Retail. Get a few quotes from a real-world customer in

```