

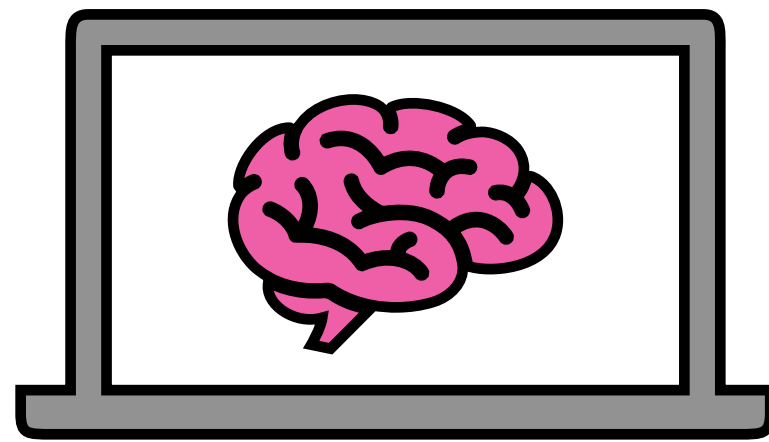
Hugging Face Transformers Library

Shawhin Talebi

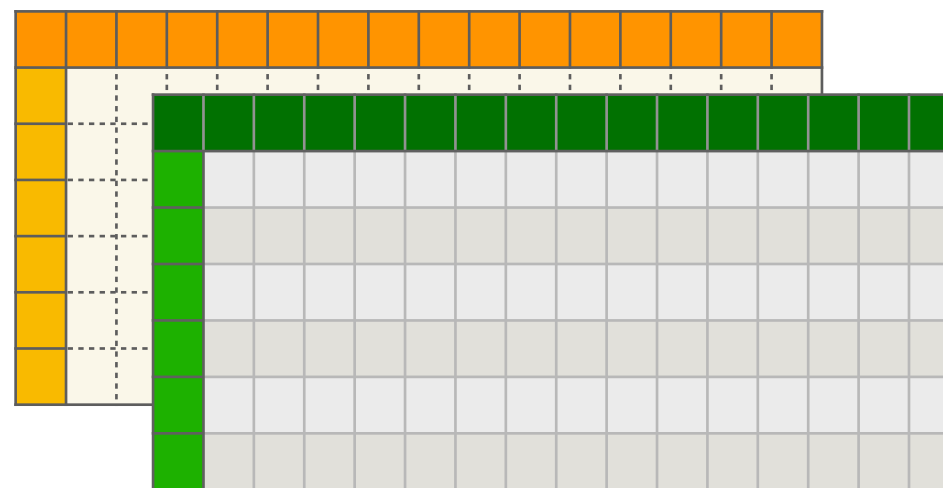


What is Hugging Face?

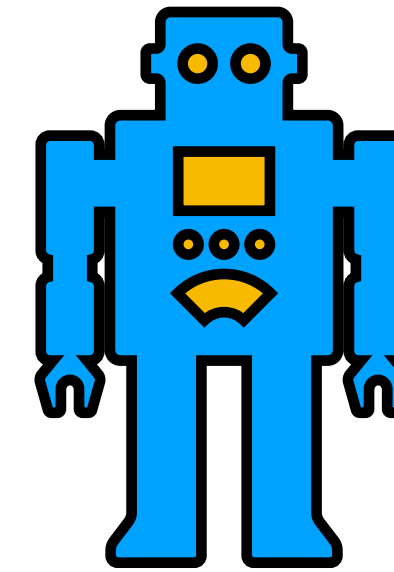
A major hub for open-source machine learning (ML)



1) Models



2) Datasets



3) Spaces

Transformers

A Python library that makes downloading and training ML models easy

Sentiment Analysis with *pipeline()*

```
pipeline(task="sentiment-analysis")("Love this!")  
  
# output -> [{'label': 'POSITIVE', 'score': 0.9998745918273926}]
```



Other tasks: summarization, translation, question-answering, feature extraction (i.e. text embedding), text generation, and more [1]

Transformers

A Python library that makes downloading and training ML models easy

Sentiment Analysis with *pipeline()*



```
pipeline(task="sentiment-analysis",  
         model='distilbert-base-uncased-finetuned-sst-2-english')("Love this!")  
  
# output -> [{'label': 'POSITIVE', 'score': 0.9998745918273926}]
```

Other tasks: summarization, translation, question-answering, feature extraction (i.e. text embedding), text generation, and more [1]

Models



A growing repository of pre-trained open-source ML models for things such as natural language processing (NLP), computer vision, and more

Installing 🤗 Transformers

pip installation

👉 <https://huggingface.co/docs/transformers/installation>

conda installation

Step 1) Download hf-env.yml from GitHub repo

Step 2) Execute following command

```
>>> cd <directory with hf-env.yml>  
  
>>> conda env create --file hf-env.yml
```

Example Code: NLP with Transformers

Sentiment Analysis

```
[4]: # defining classifier
classifier = pipeline(task="sentiment-analysis", model="distilbert-base-uncased-finetuned-sst-2-english")

[5]: classifier("Hate this.")

[5]: [{'label': 'NEGATIVE', 'score': 0.9997110962867737}]
```

Batch Prediction

```
[6]: # we can also pass in a list to classifier
text_list = ["This is great", \
             "Thanks for nothing", \
             "You've got to work on your face", \
             "You're beautiful, never change!"]

classifier(text_list)

[6]: [{'label': 'POSITIVE', 'score': 0.9998785257339478},
      {'label': 'POSITIVE', 'score': 0.9680058360099792},
      {'label': 'NEGATIVE', 'score': 0.8776113986968994},
      {'label': 'POSITIVE', 'score': 0.9998120665550232}]
```


Example Code: NLP with Transformers

Sentiment Analysis

Multiple Targets

```
[7]: # if there are multiple target labels, we can return them all
classifier = pipeline(task="text-classification", model="SamLowe/roberta-base-go_emotions", top_k=None)
```

```
[8]: classifier(text_list[0])
```

```
[8]: [[{'label': 'admiration', 'score': 0.9526104927062988},
      {'label': 'approval', 'score': 0.030472073704004288},
      {'label': 'neutral', 'score': 0.015236238949000835},
      {'label': 'excitement', 'score': 0.006063767243176699},
      {'label': 'gratitude', 'score': 0.005296194460242987},
      {'label': 'joy', 'score': 0.004475215449929237},
      {'label': 'curiosity', 'score': 0.004322331864386797},
      {'label': 'realization', 'score': 0.004089603666216135},
      {'label': 'optimism', 'score': 0.00407722033560276},
      {'label': 'disapproval', 'score': 0.004076560027897358},
      {'label': 'annoyance', 'score': 0.0035287425853312016},
      {'label': 'surprise', 'score': 0.0029730673413723707},
      {'label': 'disappointment', 'score': 0.002734640846028924},
      {'label': 'love', 'score': 0.00269458070397377},
      {'label': 'amusement', 'score': 0.0024867462925612926},
      {'label': 'confusion', 'score': 0.0023607409093528986},
      {'label': 'pride', 'score': 0.0021013382356613874},
      {'label': 'sadness', 'score': 0.001773053896613419},
      {'label': 'anger', 'score': 0.0017196929547935724},
      {'label': 'caring', 'score': 0.0013670086627826095},
```



Example Code: NLP with Transformers

Summarization

```
In [9]: summarizer = pipeline("summarization", model="facebook/bart-large-cnn")
```

```
In [10]: text = """
Hugging Face is an AI company that has become a major hub for open-source machine learning.
Their platform has 3 major elements which allow users to access and share machine learning resources.
First, is their rapidly growing repository of pre-trained open-source machine learning models for things such as
Second, is their library of datasets for training machine learning models for almost any task.
Third, and finally, is Spaces which is a collection of open-source ML apps.

The power of these resources is that they are community generated, which leverages all the benefits of open source
While these make building powerful ML projects more accessible than before, there is another key element of the H
"""

summarized_text = summarizer(text, min_length=5, max_length=140)[0]['summary_text']
summarized_text
```

```
Out[10]: 'Hugging Face is an AI company that has become a major hub for open-source machine learning. They have 3 major elements which allow users to access and share machine learning resources.'
```

Example Code: NLP with Transformers

Summarization + Sentiment Analysis

```
In [23]: classifier(summarized_text)
```

```
Out[23]: [[{'label': 'neutral', 'score': 0.9101783633232117},
            {'label': 'approval', 'score': 0.08781372010707855},
            {'label': 'realization', 'score': 0.023256294429302216},
            {'label': 'annoyance', 'score': 0.006623792927712202},
            {'label': 'admiration', 'score': 0.004981081001460552},
            {'label': 'disapproval', 'score': 0.004730119835585356},
            {'label': 'optimism', 'score': 0.0033590723760426044},
            {'label': 'disappointment', 'score': 0.0026190048083662987},
            {'label': 'confusion', 'score': 0.0019539776258170605},
            {'label': 'excitement', 'score': 0.0012417063117027283},
            {'label': 'disgust', 'score': 0.0011407802812755108},
            {'label': 'joy', 'score': 0.0010540130315348506},
            {'label': 'amusement', 'score': 0.0009572382550686598},
            {'label': 'love', 'score': 0.0008871068712323904},
            {'label': 'desire', 'score': 0.0008553270599804819},
            {'label': 'curiosity', 'score': 0.0008261068142019212},
            {'label': 'anger', 'score': 0.0007336389389820397},
            {'label': 'caring', 'score': 0.0006971127004362643}],
```

Example Code: NLP with Transformers

Conversational

```
[12]: chatbot = pipeline(model="facebook/blenderbot-400M-distill")
```

```
[13]: conversation = Conversation("Hi I'm Shaw, how are you?")  
conversation = chatbot(conversation)
```

```
[14]: conversation
```

```
[14]: Conversation id: 159e29b1-5576-40df-b479-b5fa264410ad  
user >> Hi I'm Shaw, how are you?  
bot >> I'm doing well. How are you doing this evening? I just got home from work.
```

```
[15]: conversation.add_user_input("Where do you work?")  
conversation = chatbot(conversation)
```

```
[16]: conversation
```

```
[16]: Conversation id: 159e29b1-5576-40df-b479-b5fa264410ad  
user >> Hi I'm Shaw, how are you?  
bot >> I'm doing well. How are you doing this evening? I just got home from work.  
user >> Where do you work?  
bot >> I work at a grocery store. What about you? What do you do for a living?
```


Example Code: NLP with Transformers

Chatbot UI with Gradio

```
[19]: message_list = []
      response_list = []

      def vanilla_chatbot(message, history):
          conversation = Conversation(text=message, past_user_inputs=message_list, generated_responses=response_list)
          conversation = chatbot(conversation)

          return conversation.generated_responses[-1]

      demo_chatbot = gr.ChatInterface(vanilla_chatbot, title="Vanilla Chatbot", description="Enter text to start chatting.")

      demo_chatbot.launch()
```

Running on local URL: <http://127.0.0.1:7862>

To create a public link, set `share=True` in `launch()`.

Demo 

Example Code: NLP with Transformers

Web App with HF Spaces



Git repositories hosted by
Hugging Face that allow you to
make ML applications

Cracking Open the Hugging Face Transformers Library

A quick-start guide to using open-source LLMs



Shawhin Talebi

Published in Towards Data Science · 10 min read · 3 days ago



108



2



This is the 3rd article in a series on using large language models (LLMs) in practice. Here I will give a beginner-friendly guide to the Hugging Face Transformers library, which provides an easy and cost-free way to work with a wide variety of open-source language models. I will start by reviewing key concepts and then dive into example Python code.

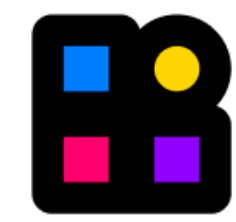


<https://github.com/ShawhinT/YouTube-Blog/tree/main/LLMs>



Models

huggingface.co/models



Spaces

hf.co/spaces





Models

huggingface.co/models



Spaces

hf.co/spaces



What's Next?

- Fine-tune pre-trained LLM
- How to train Language Model from Scratch

Cracking Open the Hugging Face Transformers Library

*

A quick-start guide to using open-source LLMs



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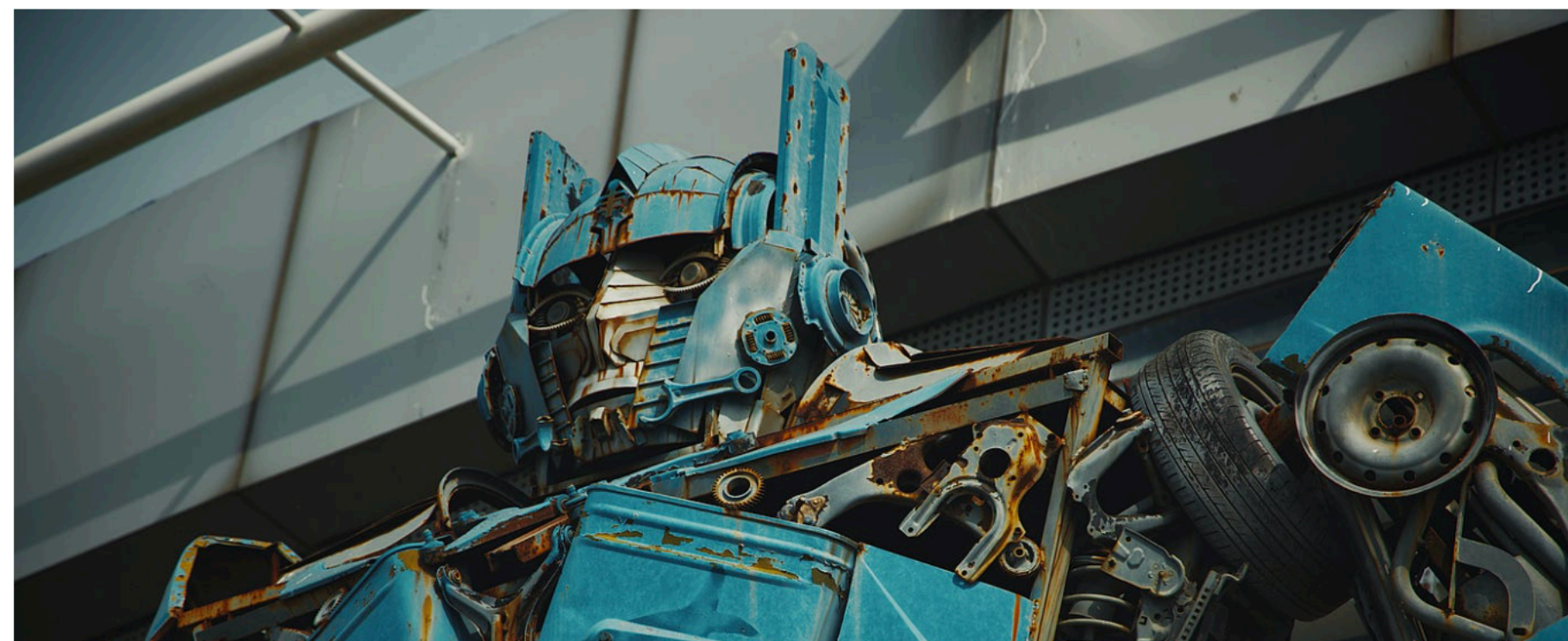
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2



This is the 3rd article in a [series on using large language models \(LLMs\)](#) in practice. Here I will give a beginner-friendly guide to the Hugging Face Transformers library, which provides an easy and cost-free way to work with a wide variety of open-source language models. I will start by reviewing key concepts and then dive into example Python code.



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