

```
!pip install gradio
```

```
Requirement already satisfied: gradio in /usr/local/lib/python3.12/dist-packages (5.46.0)
Requirement already satisfied: aiofiles<25.0,>=22.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (24.1.0)
Requirement already satisfied: anyio<5.0,>=3.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (4.10.0)
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Requirement already satisfied: ffmpeg in /usr/local/lib/python3.12/dist-packages (from gradio) (0.6.1)
Requirement already satisfied: gradio-client==1.13.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (1.13.0)
Requirement already satisfied: groovy~=0.1 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.1.2)
Requirement already satisfied: httpx<1.0,>=0.24.1 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.28.1)
Requirement already satisfied: huggingface-hub<1.0,>=0.33.5 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.35.0)
Requirement already satisfied: jinja2<4.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (3.1.6)
Requirement already satisfied: markupsafe<4.0,>=2.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (3.0.2)
Requirement already satisfied: numpy<3.0,>=1.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (2.0.2)
Requirement already satisfied: orjson~=3.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (3.11.3)
Requirement already satisfied: packaging in /usr/local/lib/python3.12/dist-packages (from gradio) (25.0)
Requirement already satisfied: pandas<3.0,>=1.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (2.2.2)
Requirement already satisfied: pillow<12.0,>=8.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (11.3.0)
Requirement already satisfied: pydantic<2.12,>=2.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (2.11.9)
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Requirement already satisfied: python-multipart==0.0.18 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.0.20)
Requirement already satisfied: pyyaml<7.0,>=5.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (6.0.2)
Requirement already satisfied: ruff>=0.9.3 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.13.0)
Requirement already satisfied: safehttpx<0.2.0,>=0.1.6 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.1.6)
Requirement already satisfied: semantic-version~=2.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (2.10.0)
Requirement already satisfied: starlette<1.0,>=0.40.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.48.0)
Requirement already satisfied: tomlkit<0.14.0,>=0.12.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.13.3)
Requirement already satisfied: typer<1.0,>=0.12 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.17.4)
Requirement already satisfied: typing-extensions~=4.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (4.15.0)
Requirement already satisfied: uvicorn>=0.14.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (0.35.0)
Requirement already satisfied: fsspec in /usr/local/lib/python3.12/dist-packages (from gradio-client==1.13.0->gradio) (2025.3.6)
Requirement already satisfied: websockets<16.0,>=10.0 in /usr/local/lib/python3.12/dist-packages (from gradio-client==1.13.0->gradio) (13.1)
Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.12/dist-packages (from anyio<5.0,>=3.0->gradio) (3.10)
Requirement already satisfied: sniffio>=1.1 in /usr/local/lib/python3.12/dist-packages (from anyio<5.0,>=3.0->gradio) (1.3.1)
Requirement already satisfied: certifi in /usr/local/lib/python3.12/dist-packages (from httpx<1.0,>=0.24.1->gradio) (2025.8.3)
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Requirement already satisfied: h11>=0.16 in /usr/local/lib/python3.12/dist-packages (from httpcore==1.*->httpx<1.0,>=0.24.1->gradio) (0.14.0)
Requirement already satisfied: filelock in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.33.5->gradio) (3.16.0)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.33.5->gradio) (2.32.3)
Requirement already satisfied: tqdm>=4.42.1 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.33.5->gradio) (4.67.1)
Requirement already satisfied: hf-xet<2.0.0,>=1.1.3 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.33.5->gradio) (1.2.2)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.12/dist-packages (from pandas<3.0,>=1.0->gradio) (2.9.0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.12/dist-packages (from pandas<3.0,>=1.0->gradio) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.12/dist-packages (from pandas<3.0,>=1.0->gradio) (2025.2)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.12/dist-packages (from pydantic<2.12,>=2.0->gradio) (0.7.0)
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Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0->gradio) (1.17.0)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.12/dist-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.12/dist-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (2.19.1)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests->huggingface-hub<1.0,>=0.33.5->gradio) (3.4.0)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests->huggingface-hub<1.0,>=0.33.5->gradio) (2.3.1)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.12/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0,>=0.12->gradio) (0.1.2)
```

```
import pandas as pd
import torch
from transformers import BertTokenizer, BertForSequenceClassification
from torch.utils.data import DataLoader, Dataset
from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report, accuracy_score
from transformers import BertForSequenceClassification, BertTokenizer
import gradio as gr
from transformers import pipeline
```

```
df = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/Restaurant_Reviews.tsv', sep='\t')
print(df.head())
```

	Review	Liked
0	Wow... Loved this place.	1
1	Crust is not good.	0
2	Not tasty and the texture was just nasty.	0
3	Stopped by during the late May bank holiday of...	1
4	The selection on the menu was great and so wer...	1

```
#Splitting data
train_texts, test_texts, train_labels, test_labels = train_test_split(
    df['Review'].tolist(), df['Liked'].tolist(), test_size=0.2, random_state=42
)
```

```
#Tokenization using BERT tokenizer
tokenizer = BertTokenizer.from_pretrained("bert-base-uncased")
```

```
train_encodings = tokenizer(train_texts, truncation=True, padding=True, max_length=128)
test_encodings = tokenizer(test_texts, truncation=True, padding=True, max_length=128)
```

/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% 48.0/48.0 [00:00<00:00, 2.14kB/s]
vocab.txt: 100% 232k/232k [00:00<00:00, 2.78MB/s]
tokenizer.json: 100% 466k/466k [00:00<00:00, 8.30MB/s]
config.json: 100% 570/570 [00:00<00:00, 36.4kB/s]
```

```
#Creating a custom Dataset
class ReviewDataset(Dataset):
    def __init__(self, encodings, labels):
        self.encodings = encodings
        self.labels = labels

    def __getitem__(self, idx):
        return {key: torch.tensor(val[idx]) for key, val in self.encodings.items()} | {'labels': torch.tensor(self.labels[idx])}

    def __len__(self):
        return len(self.labels)
```

```
train_dataset = ReviewDataset(train_encodings, train_labels)
test_dataset = ReviewDataset(test_encodings, test_labels)
```

```
#Loading pre-trained BERT model for classification
model = BertForSequenceClassification.from_pretrained("bert-base-uncased", num_labels=2)
```

```
model.safetensors: 100% 440M/440M [00:07<00:00, 65.1MB/s]
```

Some weights of BertForSequenceClassification were not initialized from the model checkpoint at bert-base-uncased and are newly
You should probably TRAIN this model on a down-stream task to be able to use it for predictions and inference.

```
#Training the model
device = torch.device("cuda" if torch.cuda.is_available() else "cpu")
model.to(device)
model.train()
```

```
train_loader = DataLoader(train_dataset, batch_size=8, shuffle=True)
```

```
optimizer = torch.optim.AdamW(model.parameters(), lr=5e-5)
```

```
for epoch in range(2): #Keeping it short for demo purposes
    for batch in train_loader:
        batch = {k: v.to(device) for k, v in batch.items()}
        outputs = model(**batch)
        loss = outputs.loss
        loss.backward()
        optimizer.step()
        optimizer.zero_grad()
    print(f"Epoch {epoch+1} done")
```

```
Epoch 1 done
Epoch 2 done
```

```
#Evaluating
model.eval()
test_loader = DataLoader(test_dataset, batch_size=8)
preds, true = [], []
```

```
with torch.no_grad():
    for batch in test_loader:
        batch = {k: v.to(device) for k, v in batch.items()}
        outputs = model(**batch)
        logits = outputs.logits
        preds.extend(torch.argmax(logits, dim=1).cpu().numpy())
        true.extend(batch['labels'].cpu().numpy())
```

```
print("Accuracy:", accuracy_score(true, preds))
print("\nClassification Report:\n", classification_report(true, preds))
```

Accuracy: 0.91

Classification Report:

	precision	recall	f1-score	support
0	0.84	1.00	0.91	96
1	1.00	0.83	0.91	104
accuracy			0.91	200
macro avg	0.92	0.91	0.91	200
weighted avg	0.92	0.91	0.91	200

```
#Using pre-trained model fine-tuned on sentiment
sentiment = pipeline("sentiment-analysis")
```

```
def analyze_sentiment(text):
    result = sentiment(text)[0]
    return f"{result['label']} ({result['score']:.2f})"
```

```
demo1 = gr.Interface(fn=analyze_sentiment, inputs="text", outputs="text", title="Restaurant Review Sentiment Analyzer")
demo1.launch() ##commenting this for clean render on github, pls use the link below to access app
```

No model was supplied, defaulted to distilbert/distilbert-base-uncased-finetuned-sst-2-english and revision 714eb0f (<https://huggingface.co/distilbert/distilbert-base-uncased-finetuned-sst-2-english>)
Using a pipeline without specifying a model name and revision in production is not recommended.

Device set to use cpu

It looks like you are running Gradio on a hosted Jupyter notebook, which requires `share=True`. Automatically setting `share=True`.

Colab notebook detected. To show errors in colab notebook, set debug=True in launch()

* Running on public URL: <https://fafd4b3ba20976b2df.gradio.live>

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal in the workspace.

Restaurant Review Sentiment Analyzer

text	output
<input type="text"/>	<input type="text"/>

Clear

Submit

Flag

Use via API  · Built with Gradio  · Settings 

```
#Model trained by us
model.save_pretrained("my_model")
tokenizer.save_pretrained("my_model")
```

```
('my_model/tokenizer_config.json',
 'my_model/special_tokens_map.json',
 'my_model/vocab.txt',
 'my_model/added_tokens.json')
```

```
#Loading our saved model and tokenizer
model = BertForSequenceClassification.from_pretrained("my_model")
tokenizer = BertTokenizer.from_pretrained("my_model")

def classify_review(text):
    inputs = tokenizer(text, return_tensors="pt", truncation=True, padding=True, max_length=128)
    with torch.no_grad():
        outputs = model(**inputs)
        logits = outputs.logits
        pred = torch.argmax(logits, dim=1).item()
```

```
return "Positive 🟡" if pred == 1 else "Negative 🟠"
```

```
demo2 = gr.Interface(fn=classify_review, inputs="text", outputs="text", title="My Fine-Tuned BERT Sentiment Analyzer").launch()
```

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Colab notebook detected. To show errors in colab notebook, set debug=True in launch()

* Running on public URL: <https://92d7662d489837114f.gradio.live>

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal in the workspace.

My Fine-Tuned BERT Sentiment Analyzer

<div>text</div> <div><div></div><div></div></div>	<div>output</div> <div><div></div><div></div></div>
---	---

Clear

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