

✓ Emotion Detection from Social Media Posts

This notebook performs sentiment/emotion classification using a pretrained DistilBERT model. You can either use the HuggingFace Emotion dataset or upload your own CSV file.

Step 1: Install Required Libraries

```
!pip install transformers
!pip install datasets
!pip install seaborn
!pip install scikit-learn
```

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Requirement already satisfied: transformers in /usr/local/lib/python3.11/dist-packages (4.51.3)
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from transformers) (3.18.0)
Requirement already satisfied: huggingface-hub<1.0,>=0.30.0 in /usr/local/lib/python3.11/dist-packages (from transformers) (0.30.0)
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Requirement already satisfied: pyarrow>=15.0.0 in /usr/local/lib/python3.11/dist-packages (from datasets) (18.1.0)
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Downloading dill-0.3.8-py3-none-any.whl (116 kB)
116.3/116.3 kB 10.2 MB/s eta 0:00:00
```

Step 2: Import Libraries

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report
from datasets import load_dataset, Dataset
from transformers import AutoTokenizer, AutoModelForSequenceClassification, TrainingArguments, Trainer
import torch
```

```
# Step 3: Option A - Use HuggingFace Emotion Dataset
use_builttin_dataset = True # Set this to False if uploading your own CSV
```

```
if use_builttin_dataset:
    dataset = load_dataset("emotion")
    df = dataset['train'].to_pandas()
```

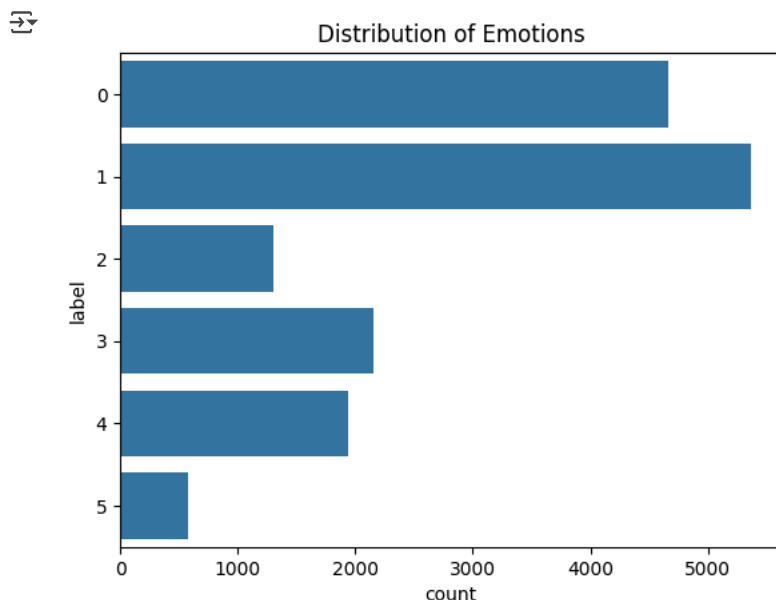
⚡ /usr/local/lib/python3.11/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret `HF_TOKEN` does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (<https://huggingface.co/settings/tokens>), set it as :
You will be able 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(
README.md: 100%                               9.05k/9.05k [00:00<00:00, 510kB/s]
train-00000-of-00001.parquet: 100%             1.03M/1.03M [00:00<00:00, 5.75MB/s]
validation-00000-of-00001.parquet: 100%         127k/127k [00:00<00:00, 1.56MB/s]
test-00000-of-00001.parquet: 100%              129k/129k [00:00<00:00, 2.72MB/s]
Generating train split: 100%                   16000/16000 [00:00<00:00, 9210.72 examples/s]
Generating validation split: 100%              2000/2000 [00:00<00:00, 23281.38 examples/s]
Generating test split: 100%                    2000/2000 [00:00<00:00, 33057.90 examples/s]
```

```
# Step 3: Option B - Upload Your Own CSV Dataset
# Run this cell if you want to upload your own file instead of using the HuggingFace dataset
```

```
if not use_builttin_dataset:
    from google.colab import files
    uploaded = files.upload()
    df = pd.read_csv(list(uploaded.keys())[0])
    df = df[['text', 'label']] # Ensure your CSV has 'text' and 'label' columns
    dataset = Dataset.from_pandas(df)
```

```
# Step 4: Visualize Emotion Distribution
sns.countplot(y='label', data=df)
plt.title("Distribution of Emotions")
plt.show()
```



```
# Step 5: Preprocessing
tokenizer = AutoTokenizer.from_pretrained("distilbert-base-uncased")

def tokenize(batch):
    return tokenizer(batch['text'], padding=True, truncation=True)

encoded_dataset = dataset.map(tokenize, batched=True)
```

```

tokenizer_config.json: 100% 48.0/48.0 [00:00<00:00, 3.27kB/s]
config.json: 100% 483/483 [00:00<00:00, 44.2kB/s]
vocab.txt: 100% 232k/232k [00:00<00:00, 1.85MB/s]
tokenizer.json: 100% 466k/466k [00:00<00:00, 23.8MB/s]
Map: 100% 16000/16000 [00:02<00:00, 5219.15 examples/s]
Map: 100% 2000/2000 [00:00<00:00, 7248.54 examples/s]
Map: 100% 2000/2000 [00:00<00:00, 6745.43 examples/s]

```

Step 6: Load Pretrained Model for Classification

```
model = AutoModelForSequenceClassification.from_pretrained("distilbert-base-uncased", num_labels=len(set(df['label'])))
```

```

Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back to regular HTTP download. For better p
WARNING:huggingface_hub.file_download:Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back
model.safetensors: 100% 268M/268M [00:01<00:00, 244MB/s]

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

```

Step 7: Training Setup

```

training_args = TrainingArguments(
    output_dir="./results",
    learning_rate=2e-5,
    per_device_train_batch_size=16,
    per_device_eval_batch_size=16,
    num_train_epochs=2,
    weight_decay=0.01,
)

trainer = Trainer(
    model=model,
    args=training_args,
    train_dataset=encoded_dataset['train'],
    eval_dataset=encoded_dataset['validation'] if use_builtin_dataset else encoded_dataset,
    tokenizer=tokenizer,
    compute_metrics=None
)

```



```

<ipython-input-8-ab7856683ed2>:11: FutureWarning: `tokenizer` is deprecated and will be removed in version 5.0.0 for `Trainer.__init
trainer = Trainer(

```

Step 8: Train the Model

```
trainer.train()
```

 **wandb:** **WARNING** The `run_name` is currently set to the same value as `TrainingArguments.output_dir`. If this was not intended, please **wandb:** Logging into wandb.ai. (Learn how to deploy a W&B server locally: <https://wandb.me/wandb-server>)
wandb: You can find your API key in your browser here: <https://wandb.ai/authorize?ref=models>
wandb: Paste an API key from your profile and hit enter:
wandb: **WARNING** If you're specifying your api key in code, ensure this code is not shared publicly.
wandb: **WARNING** Consider setting the WANDB_API_KEY environment variable, or running `wandb login` from the command line.
wandb: No netrc file found, creating one.
wandb: Appending key for api.wandb.ai to your netrc file: /root/.netrc
wandb: Currently logged in as: **starkcloudie** (**starkcloudie-company**) to <https://api.wandb.ai>. Use `wandb login --relogin` to force re-
Tracking run with wandb version 0.19.10
Run data is saved locally in /content/wandb/run-20250429_153001-ippyltuq
Syncing run [./results](#) to [Weights & Biases \(docs\)](#)
View project at <https://wandb.ai/starkcloudie-company/huggingface>
View run at <https://wandb.ai/starkcloudie-company/huggingface/runs/ippyltuq>
 [15/2000 01:49 < 4:39:28, 0.12 it/s, Epoch 0.01/2]

Step Training Loss

```
# Step 9: Evaluate the Model
> preds_output = trainer.predict(encoded_dataset['test'] if use_builtin_dataset else encoded_dataset)
y_pred = torch.argmax(torch.tensor(preds_output.predictions), axis=1)
y_true = torch.tensor(encoded_dataset['test']['label'] if use_builtin_dataset else df['label'])

# Classification Report
print(classification_report(y_true, y_pred))
```

...  [15/2000 01:49 < 4:39:28, 0.12 it/s, Epoch 0.01/2]

Step Training Loss

 [38/125 03:48 < 08:57, 0.16 it/s]

```
# Optional: Deploy with Gradio
!pip install gradio

import gradio as gr

def classify_emotion(text):
    inputs = tokenizer(text, return_tensors="pt", truncation=True, padding=True)
    outputs = model(**inputs)
    prediction = torch.argmax(outputs.logits, dim=1).item()
    labels = dataset.features['label'].names if use_builtin_dataset else sorted(df['label'].unique())
    return f"Detected Emotion: {labels[prediction]}"

gr.Interface(fn=classify_emotion, inputs="text", outputs="text", title="Emotion Detector from Social Media").launch()
```

```
Collecting gradio
  Downloading gradio-5.27.1-py3-none-any.whl.metadata (16 kB)
Collecting aiofiles<25.0, >=22.0 (from gradio)
  Downloading aiofiles-24.1.0-py3-none-any.whl.metadata (10 kB)
Requirement already satisfied: anyio<5.0, >=3.0 in /usr/local/lib/python3.11/dist-packages (from gradio) (4.9.0)
Collecting fastapi<1.0, >=0.115.2 (from gradio)
  Downloading fastapi-0.115.12-py3-none-any.whl.metadata (27 kB)
Collecting ffmpy (from gradio)
  Downloading ffmpy-0.5.0-py3-none-any.whl.metadata (3.0 kB)
Collecting gradio-client==1.9.1 (from gradio)
  Downloading gradio_client-1.9.1-py3-none-any.whl.metadata (7.1 kB)
Collecting groovy~=0.1 (from gradio)
  Downloading groovy-0.1.2-py3-none-any.whl.metadata (6.1 kB)
Requirement already satisfied: httpx>=0.24.1 in /usr/local/lib/python3.11/dist-packages (from gradio) (0.28.1)
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Requirement already satisfied: pydantic<2.12, >=2.0 in /usr/local/lib/python3.11/dist-packages (from gradio) (2.11.3)
Collecting pydub (from gradio)
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Collecting python-multipart>=0.0.18 (from gradio)
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Requirement already satisfied: pyyaml<7.0, >=5.0 in /usr/local/lib/python3.11/dist-packages (from gradio) (6.0.2)
Collecting ruff>=0.9.3 (from gradio)
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Collecting safehttpx<0.2.0, >=0.1.6 (from gradio)
  Downloading safehttpx-0.1.6-py3-none-any.whl.metadata (4.2 kB)
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Collecting starlette<1.0, >=0.40.0 (from gradio)
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Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/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/python3.11/dist-packages (from rich>=10.11.0->typer<1.0, >=0.12->gradio) (3.0.0)
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Downloaded groovy-0.1.2-py3-none-any.whl (14 kB)
Downloaded python_multipart-0.0.20-py3-none-any.whl (24 kB)
Downloaded ruff-0.11.7-py3-none-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.5 MB)
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Downloaded safehttpx-0.1.6-py3-none-any.whl (8.7 kB)
Downloaded semantic_version-2.10.0-py2.py3-none-any.whl (15 kB)
Downloaded starlette-0.46.2-py3-none-any.whl (72 kB)
72.0/72.0 kB 8.2 MB/s eta 0:00:00
Downloaded tomlkit-0.13.2-py3-none-any.whl (37 kB)
Downloaded uvicorn-0.34.2-py3-none-any.whl (62 kB)
62.5/62.5 kB 7.7 MB/s eta 0:00:00
Downloaded ffmpy-0.5.0-py3-none-any.whl (6.0 kB)
Downloaded pydub-0.25.1-py2.py3-none-any.whl (32 kB)
Installing collected packages: pydub, uvicorn, tomlkit, semantic-version, ruff, python-multipart, groovy, ffmpy, aiofiles, starlette
Successfully installed aiofiles-24.1.0 fastapi-0.115.12 ffmpy-0.5.0 gradio-5.27.1 gradio-client-1.9.1 groovy-0.1.2 pydub-0.25.1 pytz
It looks like you are running Gradio on a hosted Jupyter notebook. For the Gradio app to work, sharing must be enabled. Automatic
```