UTILIZING GPT MODEL- STRESS DETECTION FROM SOCIAL MEDIA

1) OpenAI Classification

Setup

```
In [ ]:  pip install langchain==0.0.205
```

```
Collecting langchain==0.0.205
  Downloading langchain-0.0.205-py3-none-any.whl (1.1 MB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 1.1/1.1 MB 9.9 MB/s eta 0:00:00
Requirement already satisfied: PyYAML>=5.4.1 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205) (6.0.1)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205)
(2.0.29)
Requirement already satisfied: aiohttp<4.0.0,>=3.8.3 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205)
(3.9.5)
Requirement already satisfied: async-timeout<5.0.0,>=4.0.0 in /usr/local/lib/python3.10/dist-packages (from langchain==0.
0.205) (4.0.3)
Collecting dataclasses-json<0.6.0,>=0.5.7 (from langchain==0.0.205)
  Downloading dataclasses_json-0.5.14-py3-none-any.whl (26 kB)
Collecting langchainplus-sdk>=0.0.9 (from langchain==0.0.205)
  Downloading langchainplus_sdk-0.0.20-py3-none-any.whl (25 kB)
Requirement already satisfied: numexpr<3.0.0,>=2.8.4 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205)
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Requirement already satisfied: numpy<2,>=1 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205) (1.25.2)
Collecting openapi-schema-pydantic<2.0,>=1.2 (from langchain==0.0.205)
  Downloading openapi_schema_pydantic-1.2.4-py3-none-any.whl (90 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 90.0/90.0 kB 9.6 MB/s eta 0:00:00
Collecting pydantic<2,>=1 (from langchain==0.0.205)
  Downloading pydantic-1.10.15-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (3.1 MB)
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Requirement already satisfied: requests<3,>=2 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.205) (2.31.
0)
Requirement already satisfied: tenacity<9.0.0,>=8.1.0 in /usr/local/lib/python3.10/dist-packages (from langchain==0.0.20
5) (8.2.3)
Requirement already satisfied: aiosignal>=1.1.2 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->l
angchain==0.0.205) (1.3.1)
Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->lang
chain==0.0.205) (23.2.0)
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->
langchain==0.0.205) (1.4.1)
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3
->langchain==0.0.205) (6.0.5)
Requirement already satisfied: yarl<2.0,>=1.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->lan
gchain==0.0.205) (1.9.4)
Collecting marshmallow<4.0.0,>=3.18.0 (from dataclasses-json<0.6.0,>=0.5.7->langchain==0.0.205)
  Downloading marshmallow-3.21.1-py3-none-any.whl (49 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 49.4/49.4 kB 5.8 MB/s eta 0:00:00
Collecting typing-inspect<1,>=0.4.0 (from dataclasses-json<0.6.0,>=0.5.7->langchain==0.0.205)
  Downloading typing_inspect-0.9.0-py3-none-any.whl (8.8 kB)
Requirement already satisfied: typing-extensions>=4.2.0 in /usr/local/lib/python3.10/dist-packages (from pydantic<2,>=1->
langchain==0.0.205) (4.11.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2->
langchain==0.0.205) (3.3.2)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2->langchain==
0.0.205) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2->langch
ain==0.0.205) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2->langch
ain==0.0.205) (2024.2.2)
Requirement already satisfied: greenlet!=0.4.17 in /usr/local/lib/python3.10/dist-packages (from SQLAlchemy<3,>=1.4->lang
chain==0.0.205) (3.0.3)
Requirement already satisfied: packaging>=17.0 in /usr/local/lib/python3.10/dist-packages (from marshmallow<4.0.0,>=3.18.
0->dataclasses-json<0.6.0,>=0.5.7->langchain==0.0.205) (24.0)
Collecting mypy-extensions>=0.3.0 (from typing-inspect<1,>=0.4.0->dataclasses-json<0.6.0,>=0.5.7->langchain==0.0.205)
  Downloading mypy_extensions-1.0.0-py3-none-any.whl (4.7 kB)
Installing collected packages: pydantic, mypy-extensions, marshmallow, typing-inspect, openapi-schema-pydantic, langchain
plus-sdk, dataclasses-json, langchain
  Attempting uninstall: pydantic
    Found existing installation: pydantic 2.7.0
    Uninstalling pydantic-2.7.0:
      Successfully uninstalled pydantic-2.7.0
Successfully installed dataclasses-json-0.5.14 langchain-0.0.205 langchainplus-sdk-0.0.20 marshmallow-3.21.1 mypy-extensi
ons-1.0.0 openapi-schema-pydantic-1.2.4 pydantic-1.10.15 typing-inspect-0.9.0
```

```
In [ ]:  pip install python-dotenv
```

```
Collecting python-dotenv
  Downloading python_dotenv-1.0.1-py3-none-any.whl (19 kB)
Installing collected packages: python-dotenv
Successfully installed python-dotenv-1.0.1
```

In [ ]:
```
pip install openai==0.27.8
```

```
Collecting openai==0.27.8
  Downloading openai-0.27.8-py3-none-any.whl (73 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 73.6/73.6 kB 1.3 MB/s eta 0:00:00
Requirement already satisfied: requests>=2.20 in /usr/local/lib/python3.10/dist-packages (from openai==0.27.8) (2.31.0)
Requirement already satisfied: tqdm in /usr/local/lib/python3.10/dist-packages (from openai==0.27.8) (4.66.2)
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Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests>=2.20->
openai==0.27.8) (3.3.2)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests>=2.20->openai==0.2
7.8) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests>=2.20->openai
==0.27.8) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests>=2.20->openai
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Requirement already satisfied: aiosignal>=1.1.2 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==0.27.8)
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Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==0.27.8) (2
3.2.0)
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==0.27.
8) (1.4.1)
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==0.2
7.8) (6.0.5)
Requirement already satisfied: yarl<2.0,>=1.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==0.27.8)
(1.9.4)
Requirement already satisfied: async-timeout<5.0,>=4.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp->openai==
0.27.8) (4.0.3)
Installing collected packages: openai
Successfully installed openai-0.27.8
```

In [ ]:
```python
import pandas as pd
import openai
import langchain
from dotenv import load_dotenv
import os
from tqdm import tqdm

from langchain import LLMChain
from langchain.chat_models import ChatOpenAI

from langchain.prompts import (
    ChatPromptTemplate,
    PromptTemplate,
    SystemMessagePromptTemplate,
    AIMessagePromptTemplate,
    HumanMessagePromptTemplate,
)


load_dotenv()  # take environment variables from .env.
```

Out[ ]:
```
False
```

In [ ]:
```python
%load_ext autoreload
%autoreload 2
```

In [ ]:
```python
seed = 42    # for reproducibility
import getpass
OPENAI_API_KEY = getpass.getpass()
```

```
··········
```

In [ ]:
```python
openai.api_key = OPENAI_API_KEY
```

In [ ]:

Import Data

In [ ]:
```python
import pandas as pd

# data from Kaggle: https://www.kaggle.com/datasets/mexwell/stress-detection-from-social-media-articles
df = pd.read_csv('/content/Reddit_Combi.csv', delimiter=';')
df = df[['Body_Title', 'label']]
df
```

```
Out[ ]:
```

	Body_Title	label
0	Envy to other is swallowing me Im from develop…	1
1	Nothin outta the ordinary. Paradise. Job stres…	1
2	Almost 49 and the chasm of emptiness has never…	1
3	I'm happy again After my closest friend left m…	0
4	Is it possible to recover from such a traumati…	1
...	...	...
3118	Positive relief ideas with stress? Hi all, my …	1
3119	Breakdown I really think I lost my mind last n…	1
3120	I feel as if I actually died a long time ago a…	1
3121	Is it wierd that i have imaginary friends at t…	1
3122	Head and Eye Pressure Since October (for the l…	1

3123 rows × 2 columns

```python
df_sampled = df.sample(200, random_state=10)
```

```python
def example_rows(df):
    print("Example of a stress related text")
    print(df[df["label"]==1].iloc[0]['Body_Title'])
    print()
    print("Example of a non-stress related text")
    print(df[df["label"]==0].iloc[0]["Body_Title"])
```

```python
print("Number of rows: ",len(df_sampled))
print("Number of stress related texts: ",len(df_sampled[df_sampled["label"]==1]))
print()
example_rows(df_sampled)
```

```
Number of rows:  200
Number of stress related texts:  176

Example of a stress related text
Low I'm so low rn I can't even type anything coherent..I just want to express I'm at one of my lowest points so that I do
n't do stupid things. Thanks for listening.. Edit Thank you to each and every one of you who took a few seconds or even m
inutes to remind me that I matter... that even though those "close to me" feel far.. those farthest from me can feel so c
lose red_heart You're a reminder that there's still good in this world and I appreciate all of you. We'll all be here tog
ether, one day at a time x -RF

Example of a non-stress related text
Now boyfriend, inally over my ex who i o seemed over I was obssesed with my ex. I missed him so much it landed me in the
psychward 3 times trying to kms. But im finally over it. I have a new boyfriend who I love to pieces. We hung out today a
nd went to a park ( and made out in a tunnel so that was fun ) and im just. So happy. I havent felt _actually_ happy sinc
e my ex left me. But for once im happy. I won't be checking my ex's reddit anymore. Never again. I shouldn't care about s
omeone who hates me when I have someone right in front of me who loves me. And I love him. On Tuesday were gonna get drun
k and maybe fuck in said tunnel. Because why tf not. Its time I moved on.
```

Zero-Shot Prompting

```python
def stress_annotate_prompt() -> list:
    system_message = SystemMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=[],
            template="You are a model that annotates stress and non-stress related texts."
        )
    )
    human_message = HumanMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=["text"],
            template="""Classify the following text as being stress related or non-stress related.
            Reply with 'Stress' if it's stress related and 'Non-stress' if it's non-stress related.
            Text: {text}
            """
        )
    )
    return [system_message, human_message]
```

```python
example_text = "Every phone call was another demand, another task to add to the never-ending list of responsibilities."
```

```python
llm = ChatOpenAI(model_name="gpt-3.5-turbo", temperature=0.9, openai_api_key=OPENAI_API_KEY)
prompt = ChatPromptTemplate.from_messages(stress_annotate_prompt())
```

```
chain = LLMChain(prompt=prompt, llm=llm)
generated = chain.run({"text": example_text})
```

In [ ]:
```
print(generated)
```

```
Stress
```

In [ ]:

In [ ]:
```
generated = []
prompt = ChatPromptTemplate.from_messages(stress_annotate_prompt())
chain = LLMChain(prompt=prompt, llm=llm)
for i, row in tqdm(df_sampled.iterrows(), total=len(df_sampled)):
    text = row["Body_Title"]
    generated.append(chain.run({"text": text}))
df_sampled["predict"] = generated
```

```
100%|██████████| 200/200 [01:07<00:00,  2.96it/s]
```

In [ ]:
```
df_sampled["predict"]
```

Out[ ]:
```
1790    Stress
2639    Stress
1797    Stress
1989    Stress
130     Stress
         ...
3122    Stress
1832    Stress
2382    Stress
737     Stress
835     Stress
Name: predict, Length: 200, dtype: object
```

In [ ]:
```
def process_text(x):
    if x==0:
        return "Non-stress"
    else:
        return "Stress"

df_sampled["label"] = df_sampled["label"].apply(lambda x: process_text(x))
```

In [ ]:
```
df_sampled[df_sampled['predict']=='Stress']
```

Out[ ]:

	Body_Title	label	predict
1790	Low I'm so low rn I can't even type anything c...	Stress	Stress
2639	I'm literally not good at anything. I suck soc...	Stress	Stress
1797	Now boyfriend, inally over my ex who i o seeme...	Non-stress	Stress
1989	I have a plan. I have no money. I stay up for ...	Stress	Stress
130	Long, but need advice on money stress My husba...	Stress	Stress
...	...	...	...
3122	Head and Eye Pressure Since October (for the l...	Stress	Stress
1832	Help with managing stress Hi All, I'm hoping f...	Stress	Stress
2382	Work is giving me stress I get criticised ever...	Stress	Stress
737	For those of you doing okay in school, how do ...	Stress	Stress
835	y'all ever just give up mid-day and zone the f...	Stress	Stress

194 rows × 3 columns

In [ ]:
```
# Save DataFrame to a CSV file
df_sampled.to_csv('stress_predict.csv', index=False)
```

In [ ]:
```
from sklearn.metrics import accuracy_score, precision_recall_fscore_support
accuracy = accuracy_score(df_sampled["label"], df_sampled["predict"])
precision, recall, f1, _ = precision_recall_fscore_support(df_sampled["label"], df_sampled["predict"], average="macro")

print(f"Accuracy: {accuracy}")
print(f"F1 score: {round(f1, 3)}")
```

```
Accuracy: 0.875
F1 score: 0.217
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Recall and F-sco
re are ill-defined and being set to 0.0 in labels with no true samples. Use `zero_division` parameter to control this beh
avior.
  _warn_prf(average, modifier, msg_start, len(result))
```

In [ ]:

2) Fine-tune an LLM using GPT2

In [ ]:
```python
import torch
from transformers import GPT2Tokenizer, GPT2ForSequenceClassification
from torch.utils.data import Dataset, DataLoader
from sklearn.model_selection import train_test_split
import pandas as pd
```

In [ ]:
```python
# data from Kaggle: https://www.kaggle.com/datasets/mexwell/stress-detection-from-social-media-articles
df = pd.read_csv('/content/Reddit_Combi.csv', delimiter=';')
df = df[['Body_Title', 'label']]
df
```

Out[ ]:

	Body_Title	label
0	Envy to other is swallowing me Im from develop...	1
1	Nothin outta the ordinary. Paradise. Job stres...	1
2	Almost 49 and the chasm of emptiness has never...	1
3	I'm happy again After my closest friend left m...	0
4	Is it possible to recover from such a traumati...	1
...	...	...
3118	Positive relief ideas with stress? Hi all, my ...	1
3119	Breakdown I really think I lost my mind last n...	1
3120	I feel as if I actually died a long time ago a...	1
3121	Is it wierd that i have imaginary friends at t...	1
3122	Head and Eye Pressure Since October (for the l...	1

3123 rows × 2 columns

In [ ]:
```python
data = df.sample(100, random_state=10)
```

In [ ]:
```python
# Reset index to ensure sequential indexing
data = data.reset_index(drop=True)
```

In [ ]:
```python
# Split data into train and validation sets
train_texts, val_texts, train_labels, val_labels = train_test_split(data['Body_Title'], data['label'], test_size=0.2)
```

In [ ]:
```python
# Tokenize text data
tokenizer = GPT2Tokenizer.from_pretrained('gpt2')
tokenizer.pad_token = tokenizer.eos_token
train_encodings = tokenizer(train_texts.tolist(), truncation=True, padding=True)
val_encodings = tokenizer(val_texts.tolist(), truncation=True, padding=True)
```

In [ ]:
```python
class MyDataset(Dataset):
    def __init__(self, encodings, labels):
        self.encodings = encodings
        self.labels = labels

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

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

train_dataset = MyDataset(train_encodings, train_labels.values)
val_dataset = MyDataset(val_encodings, val_labels.values)
```

In [ ]:
```python
# Load pre-trained GPT-2 model for sequence classification
model = GPT2ForSequenceClassification.from_pretrained('gpt2', num_labels=2)
```

In [ ]:
```python
# Fine-tune the model
#device = torch.device('cuda') if torch.cuda.is_available() else torch.device('cpu')
#model.to(device)
model.train()

train_loader = DataLoader(train_dataset, batch_size=1, shuffle=True)

optim = torch.optim.AdamW(model.parameters(), lr=5e-5)
for epoch in range(2):
    for batch in train_loader:
        optim.zero_grad()
        input_ids = batch['input_ids']
        attention_mask = batch['attention_mask']
        labels = batch['labels']
        outputs = model(input_ids, attention_mask=attention_mask, labels=labels)
        loss = outputs.loss
        loss.backward()
        optim.step()
```

In [ ]:
```python
import pandas as pd
from sklearn.metrics import accuracy_score, f1_score

# Evaluation
model.eval()
val_loader = DataLoader(val_dataset, batch_size=1, shuffle=False)
total_eval_loss = 0
predictions = []
true_labels = []

for batch in val_loader:
    with torch.no_grad():
        input_ids = batch['input_ids']
        attention_mask = batch['attention_mask']
        labels = batch['labels']
        outputs = model(input_ids, attention_mask=attention_mask, labels=labels)
        total_eval_loss += outputs.loss.item()

        # Convert logits to probabilities and get predicted labels
        logits = outputs.logits
        probabilities = torch.softmax(logits, dim=-1)
        predicted_labels = torch.argmax(probabilities, dim=-1)

        # Append predicted and true labels
        predictions.extend(predicted_labels.cpu().numpy())
        true_labels.extend(labels.cpu().numpy())
```

In [ ]:
```python
# Calculate accuracy
accuracy = accuracy_score(true_labels, predictions)
print("Accuracy:", accuracy)

# Calculate F1 score
f1 = f1_score(true_labels, predictions)
print("F1 Score:", f1)

average_eval_loss = total_eval_loss / len(val_loader)
print("Average validation loss:", average_eval_loss)
```

```
Accuracy: 0.85
F1 Score: 0.9189189189189189
Average validation loss: 0.5386338291456922
```

In [ ]:
```python
# Create a DataFrame for the Valudation Dataset
df_compare = pd.DataFrame({'Predicted': predictions, 'True': true_labels})
df_compare
```

```
Out[ ]:        Predicted   True

        0           1       1

        1           1       1

        2           1       1

        3           1       1

        4           1       1

        5           1       1

        6           1       1

        7           1       1

        8           1       1

        9           1       1

        10          1       0

        11          1       1

        12          1       1

        13          1       0

        14          1       1

        15          1       0

        16          1       1

        17          1       1

        18          1       1

        19          1       1
```

In [ ]:

3) Generating Data

In [ ]:
```python
def stress_grounded_prompt() -> list:
    system_message = SystemMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=[],
            template="You are a model that generates stressful and non-stressful texts."
        )
    )
    human_message = HumanMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=["text", "num_generations", "direction"],
            template="""Rewrite the following text {num_generations} times to make it {direction}.
            Make as few changes as possible to the text and stay true to its underlying style.
            Text: {text}
            """
        )
    )
    return [system_message, human_message]
```

In [ ]:
```python
example_text = "Every phone call was another demand, another task to add to the never-ending list of responsibilities."
```

In [ ]:
```python
llm = ChatOpenAI(model_name="gpt-3.5-turbo", temperature=0.9, max_tokens=512, openai_api_key=OPENAI_API_KEY)
prompt = ChatPromptTemplate.from_messages(stress_grounded_prompt())
chain = LLMChain(prompt=prompt, llm=llm)
generated = chain.run({"text": example_text, "direction": "stressful", "num_generations": 1})
```

In [ ]:
```python
print(generated)
```

Every phone call felt like another urgent demand, piling on yet another task to the overwhelming, never-ending list of responsibilities.

In [ ]:
```python
df_sampled = df.sample(10, random_state=42)
```

In [ ]:
```python
# Initialize lists to store augmented texts for more and less stressful directions
more_stressful_texts = []
less_stressful_texts = []

# Iterate through each row in the DataFrame
for i, row in tqdm(df_sampled.iterrows(), total=len(df_sampled)):
```

```python
    # Iterate through each direction
    for direction in ["stressful", "non-stressful"]:
        text = row["Body_Title"]
        prompt = ChatPromptTemplate.from_messages(stress_grounded_prompt())
        chain = LLMChain(prompt=prompt, llm=llm)
        augmented_text = chain.run({"text": text, "direction": direction, "num_generations": 1})

        # Append the augmented text to the corresponding list based on the direction
        if direction == "stressful":
            more_stressful_texts.append(augmented_text)
        else:
            less_stressful_texts.append(augmented_text)

# Add the lists as new columns in the DataFrame
df_sampled["More Stressful"] = more_stressful_texts
df_sampled["Less Stressful"] = less_stressful_texts
```

```
100%|████████| 10/10 [01:04<00:00,  6.47s/it]
```

In [ ]: `df_sampled`

Out[ ]:

	Body_Title	label	More Stressful	Less Stressful
3011	Is there a light at the end of the tunnel? I've...	1	Is there any light at the end of this never-en...	Text: Is there a light at the end of the tunne...
2979	We only see those who get better Aka survivors...	1	Rewrite the following text 1 times to make it ...	Text: We also need to acknowledge those who ha...
2670	I miss the old me I've forgotten what genuine ...	1	Text: I miss the old me I've forgotten what ge...	Rewrite:\nI remember the old me, and I miss th...
214	Baby boy born 10 01 P.M. on Father's Day! Who ...	0	Text: Baby boy born 10 01 P.M. on Father's Day...	Rewritten text: Baby boy born at 10:01 PM on F...
2950	Huh...the human mind is interesting... I don't...	1	Text: Oh no, the human mind is so confusing......	Rewrite:\n Hmm...the human mind is ...
2467	I'll tell my deepest, darkest secrets to stran...	1	I reveal my innermost secrets to complete stra...	Text: I'm comfortable sharing my deepest thoug...
2603	How do you get over overthinking??? Ever since...	0	Rewrite the following text 1 times to make it ...	Text: I sometimes tend to overthink things, bu...
2257	Annus Horribilus Today is the anniversary of m...	1	Today is the anniversary of my daughter's deat...	Non-stressful version: Annus Horribilus Today ...
1356	Stress in school I need help with coping with ...	1	Stressed in school! Help needed urgently to co...	Rewrite: Dealing with challenges in school I c...
1999	It's Happening Again I can feel it. Building i...	1	I can feel it happening again. Consuming me fr...	Text: It's happening again. I can feel it. Bui...

In [ ]:
```python
# Save DataFrame to a CSV file
df_sampled.to_csv('generated_stressful.csv', index=False)
```

In [ ]:

Sentiment Analysis

In [ ]:
```python
from sklearn.feature_extraction.text import CountVectorizer

from yellowbrick.text import FreqDistVisualizer
```

In [ ]:
```python
# Step 1: Prepare your text data
original_stress = df_sampled[df_sampled['label']== 1]['Body_Title']
generated_stress = df_sampled['More Stressful']
```

In [ ]: `df_sampled['Body_Title'].iloc[0]`

`Out[ ]:` 'Is there a light at the end of the tunnel? I've been battling with chronic stress for about 3 weeks now. I want to say the cause of it is my job. It's the only thing that makes sense. Due to the pandemic, I've had 4 different positions within the past 3 months. My regular position that I held before this all this happened was awesome. I actually loved my job and looked forward to work each morning. When everything shut down back in March, until about the middle of May, I was moved to two other positions that we still pretty relaxed, the hours just kind of sucked. But now this new role that I've been in for about a month is killing me. It's very stressful, the days are long, it seems like a constant race against the clock, the people I deal with can be a pain which adds more stress. I keep telling myself it's only temporary and hopefully I'll be able to get my old job as things start to normalize more. But for the past 3 weeks my symptoms have included Weighted chest (most prominent symptom) Lightheadedness/Dizziness Tightness in neck and shoulders Lower back pain Anxiety that won't go away Rapid heartbeat Acid reflux/heartburn Stomach issues Fatigue I have tired to change my diet to start eating a bit healthier. I've also been trying breathing exercises and doing stretching in the evenings when I get home from work. It seems to help a little. I also plan on getting back to the gym, because I know exercise will help out as well. I'm just wondering if this is something that will eventually go away or am I in it for the long haul? I've felt this way once before, about a month before my daughter was born. But it completely went away right after she was born. Not kidding. Maybe big life changes are my trigger? But I didn't feel this way when I got married or bought a house or anything like that. Any insight or advice to manage this is greatly appreciated!!'

`In [ ]:`
```python
df_sampled['More Stressful'].iloc[0]
```

`Out[ ]:` "Is there any light at the end of this never-ending tunnel of stress? I've been relentlessly battling with chronic stress for about 3 agonizing weeks now. I want to scream that the cause of it is my job. It's the only thing that makes sense in this chaotic mess. Due to the pandemic, I've been tossed around like a rag doll through 4 different positions within the past 3 months. My once-beloved regular position that I held before all this turmoil happened feels like a distant dream. When everything fell apart back in March, until about the middle of May, I was tossed around to two other positions that were somewhat bearable, but the hours were soul-crushing. But now, this new role that I've been trapped in for about a month is slowly suffocating me. It's an unforgiving nightmare, the days stretch endlessly, a relentless race against the clock, dealing with difficult people who only add to my mounting stress. I keep desperately clinging to the hope that it's only temporary, and maybe, just maybe, I'll be able to reclaim my old job as things start to normalize. But for the past 3 weeks, my body and mind have been bombarded with a relentless onslaught of symptoms: A heavy, suffocating weight on my chest (most agonizing symptom), persistent lightheadedness and dizziness, an unrelenting tightness in my neck and shoulders, lower back pain, unshakeable anxiety, a racing heartbeat, acid reflux and heartburn, stomach issues, and unending fatigue. I've attempted to make small changes by adjusting my diet to something healthier. I've been desperately grasping at breathing exercises and stretching in the evenings when I stumble home from work, hoping for some semblance of relief. It seems to provide a flicker of respite. I also plan to drag myself back to the gym, because I know deep down that exercise might offer some solace. Yet, I'm plagued with the relentless doubt - will this agony ever fade away, or am I doomed to endure this torment indefinitely? I've experienced a similar turmoil once before, about a month before my daughter's birth. Miraculously, all the pain vanished right after she arrived. It sounds like a twisted joke, but maybe the arrival of major life changes is my curse? Strangely, I didn't feel this way when I got married or bought a house or any of that. Any wisdom or advice to navigate through this unending nightmare would be a beacon"

`In [ ]:`
```python
df_sampled['Less Stressful'].iloc[0]
```

`Out[ ]:` "Text: Is there a light at the end of the tunnel? I've been feeling a bit stressed for about 3 weeks now. I think my job might be the main cause. Due to the pandemic, I've had a few different positions in the past 3 months. My regular job before all this was great - I loved it and looked forward to it. Things changed in March, and I was moved around to different positions. The current one is a bit challenging, with long days and some difficult people, but I try to remind myself it's temporary. I've been experiencing some symptoms lately, and I'm trying to take care of myself by eating better and doing some exercises. I hope things will get better soon."

`In [ ]:`
```python
from transformers import pipeline

# Load the sentiment analysis pipeline
sentiment_classifier = pipeline("sentiment-analysis")

# Perform sentiment analysis on a given text
result = sentiment_classifier(df_sampled['Body_Title'].iloc[0])
print(result)
```

No model was supplied, defaulted to distilbert/distilbert-base-uncased-finetuned-sst-2-english and revision af0f99b (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.
[{'label': 'NEGATIVE', 'score': 0.7747209072113037}]

`In [ ]:`
```python
import re
import string

# Define the pattern to match punctuation and special characters
pattern = r'[^a-zA-Z\s]'
# Remove punctuation and special characters using regex
text = re.sub(pattern, "", df_sampled['More Stressful'].iloc[0])

result = sentiment_classifier(text)
print(result)
```

[{'label': 'NEGATIVE', 'score': 0.9989801049232483}]

`In [ ]:`
```python
# Perform sentiment analysis on a given text
result = sentiment_classifier(df_sampled['Less Stressful'].iloc[0])
print(result)
```

[{'label': 'POSITIVE', 'score': 0.9708982110023499}]

`In [ ]:`

```python
df_sampled['Body_Title'].iloc[3]
```

"Baby boy born 10 01 P.M. on Father's Day! Who could ask for a better gift? Because of covid restrictions myself and our 4 year old daughter could not be there in person for the birth, but the nurses video called us just in the nick of time and we cheered Momma on the whole way) Her and I partied until she passed out on the couch. Best Father's Day ever."

```python
df_sampled['More Stressful'].iloc[3]
```

"Text: Baby boy born 10 01 P.M. on Father's Day! Who could ask for a better gift? Due to covid restrictions, my 4-year-old daughter and I were unable to be there for the birth in person, causing immense stress and anxiety. The nurses video called us just in the nick of time, and we frantically cheered Momma on through the whole process. We celebrated heartily until she collapsed on the couch from exhaustion. Not quite the ideal Father's Day under these circumstances."

```python
df_sampled['Less Stressful'].iloc[3]
```

"Rewritten text: Baby boy born at 10:01 PM on Father's Day! What a wonderful gift to receive. Due to covid restrictions, my 4-year-old daughter and I were unable to be present for the birth, but the nurses kindly video called us just in time and we supported Momma throughout. She and I celebrated together until she drifted off to sleep on the couch. A truly special Father's Day."

```python
# Perform sentiment analysis on a given text
result1 = sentiment_classifier(df_sampled['Body_Title'].iloc[3])
result2 = sentiment_classifier(df_sampled['More Stressful'].iloc[3])
result3 = sentiment_classifier(df_sampled['Less Stressful'].iloc[3])
print(result1)
print(result2)
print(result3)
```

```
[{'label': 'POSITIVE', 'score': 0.99869304895401}]
[{'label': 'NEGATIVE', 'score': 0.5187443494796753}]
[{'label': 'POSITIVE', 'score': 0.9988985061645508}]
```

Word Cloud

```python
import pandas as pd

df_sampled = pd.read_csv('/content/generated_stressful.csv')
df_sampled
```

	Body_Title	label	More Stressful	Less Stressful
0	Is there a light at the end of the tunnel? I'v...	1	Is there any light at the end of this never-en...	Text: Is there a light at the end of the tunne...
1	We only see those who get better Aka survivors...	1	Rewrite the following text 1 times to make it ...	Text: We also need to acknowledge those who ha...
2	I miss the old me I've forgotten what genuine ...	1	Text: I miss the old me I've forgotten what ge...	Rewrite:\nI remember the old me, and I miss th...
3	Baby boy born 10 01 P.M. on Father's Day! Who ...	0	Text: Baby boy born 10 01 P.M. on Father's Day...	Rewritten text: Baby boy born at 10:01 PM on F...
4	Huh...the human mind is interesting... I don't...	1	Text: Oh no, the human mind is so confusing......	Rewrite:\n Hmm...the human mind is ...
5	I'll tell my deepest, darkest secrets to stran...	1	I reveal my innermost secrets to complete stra...	Text: I'm comfortable sharing my deepest thoug...
6	How do you get over overthinking??? Ever since...	0	Rewrite the following text 1 times to make it ...	Text: I sometimes tend to overthink things, bu...
7	Annus Horribilus Today is the anniversary of m...	1	Today is the anniversary of my daughter's deat...	Non-stressful version: Annus Horribilus Today ...
8	Stress in school I need help with coping with ...	1	Stressed in school! Help needed urgently to co...	Rewrite: Dealing with challenges in school I c...
9	It's Happening Again I can feel it. Building i...	1	I can feel it happening again. Consuming me fr...	Text: It's happening again. I can feel it. Bui...

```python
pip install wordcloud matplotlib
```

```python
from wordcloud import WordCloud
import matplotlib.pyplot as plt
from nltk.tokenize import word_tokenize
from nltk.corpus import words
import nltk

nltk.download('punkt')
nltk.download('words')

# Sample text data
text = df_sampled['More Stressful'].iloc[0]

# Tokenize the text
tokens = word_tokenize(text)

# Get English vocabulary from NLTK's words corpus
english_vocab = set(words.words())

# Filter out non-English words
english_tokens = [token for token in tokens if token.lower() in english_vocab]

# Join the English tokens back into a single string
processed_text = ' '.join(english_tokens)


# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(processed_text)

# Display the word cloud using matplotlib
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Word Cloud of More Stressful Text')
plt.axis('off')
plt.show()
```

```
[nltk_data] Downloading package punkt to /root/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
[nltk_data] Downloading package words to /root/nltk_data...
[nltk_data]   Package words is already up-to-date!
```


Word Cloud of More Stressful Text

```python
# Sample text data
text = df_sampled['Less Stressful'].iloc[0]
```

```python
# Tokenize the text
tokens = word_tokenize(text)

# Get English vocabulary from NLTK's words corpus
english_vocab = set(words.words())

# Filter out non-English words
english_tokens = [token for token in tokens if token.lower() in english_vocab]

# Join the English tokens back into a single string
processed_text = ' '.join(english_tokens)

# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(processed_text)

# Display the word cloud using matplotlib
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Word Cloud of Less Stressful Text')
plt.axis('off')
plt.show()
```
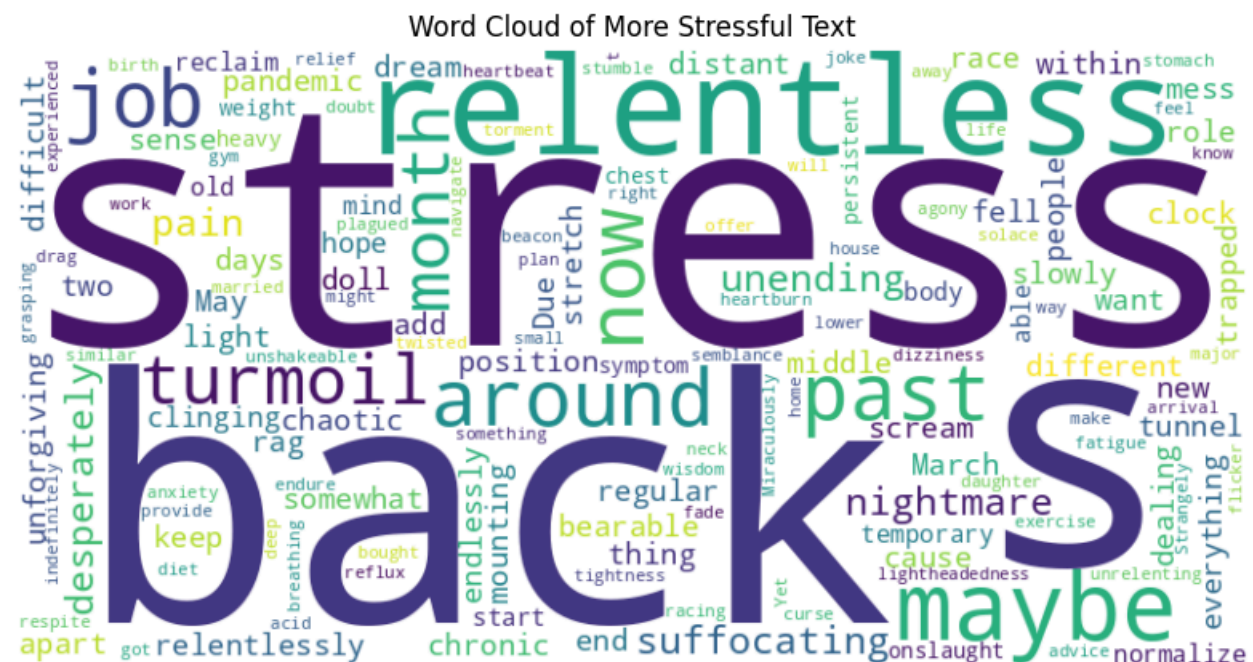

Word Cloud of Less Stressful Text

In [ ]:
```python
# Sample text data
text = df_sampled['Body_Title'].iloc[0]

# Tokenize the text
tokens = word_tokenize(text)

# Get English vocabulary from NLTK's words corpus
english_vocab = set(words.words())

# Filter out non-English words
english_tokens = [token for token in tokens if token.lower() in english_vocab]

# Join the English tokens back into a single string
processed_text = ' '.join(english_tokens)

# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(processed_text)

# Display the word cloud using matplotlib
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Word Cloud of Original Text')
plt.axis('off')
plt.show()
```

Word Cloud of Original Text

In [ ]:

In [ ]:
```python
# Sample text data
text = df_sampled['More Stressful'].iloc[3]

# Tokenize the text
tokens = word_tokenize(text)

# Get English vocabulary from NLTK's words corpus
english_vocab = set(words.words())

# Filter out non-English words
english_tokens = [token for token in tokens if token.lower() in english_vocab]

# Join the English tokens back into a single string
processed_text = ' '.join(english_tokens)


# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(processed_text)

# Display the word cloud using matplotlib
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Word Cloud of More Stressful Text')
plt.axis('off')
plt.show()
```


Word Cloud of More Stressful Text

```python
# Sample text data
text = df_sampled['Less Stressful'].iloc[3]

# Tokenize the text
tokens = word_tokenize(text)

# Get English vocabulary from NLTK's words corpus
english_vocab = set(words.words())

# Filter out non-English words
english_tokens = [token for token in tokens if token.lower() in english_vocab]

# Join the English tokens back into a single string
processed_text = ' '.join(english_tokens)

# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(processed_text)

# Display the word cloud using matplotlib
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Word Cloud of Less Stressful Text')
plt.axis('off')
plt.show()
```


Word Cloud of Less Stressful Text

4) Few-Shots Prompting

```python
from langchain.prompts.few_shot import FewShotPromptTemplate
```

```python
def stress_annotate_prompt() -> list:
    system_message = SystemMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=[],
            template="You are a model that annotates stressful and non-stressful texts."
        )
    )
    # Include stressful and non-stressful examples in the human message prompt
    human_message = HumanMessagePromptTemplate(
        prompt=PromptTemplate(
            input_variables=["text"],
            template="""Classify the following text as being stressful or non-stressful. Reply with 'Stressful' if it's s
            Text: {text}

            Stressful Examples:
            I lost my job, and I don't know how I'm going to pay my bills.
            I'm facing a difficult decision, and I'm afraid of making the wrong choice.
            I'm constantly worried about the future and whether I'll be able to succeed.

            Non-stressful Examples:
```

```
                I'm taking things one step at a time and focusing on the present moment.
                I am ready to tackle whatever the day brings.
                I took a long nap in the afternoon and woke up feeling refreshed.
                """
        )
    )
    return [system_message, human_message]
```

```
llm = ChatOpenAI(model_name="gpt-3.5-turbo", temperature=0.9, openai_api_key=OPENAI_API_KEY)
# Create prompt including examples
prompt = ChatPromptTemplate.from_messages(stress_annotate_prompt())
chain = LLMChain(prompt=prompt, llm=llm)
```

```
generated = []
# Iterate through the DataFrame and generate predictions
for i, row in tqdm(df_sampled.iterrows(), total=len(df_sampled)):
    text = row["Body_Title"]
    generated.append(chain.run({"text": text}))

# Add the predictions as a new column in the DataFrame
df_sampled["predict"] = generated
```

```
100%|██████████| 200/200 [01:08<00:00,  2.93it/s]
```

```
def process_text(x):
    """
    Process GPT outputs. Otherwise
    """
    if x==0:
        return "Non-stressful"
    else:
        return "Stressful"

df_sampled["label"] = df_sampled["label"].apply(lambda x: process_text(x))
```

```
df_sampled[df_sampled['predict']=='Stressful']
```

	Body_Title	label	predict
1790	Low I'm so low rn I can't even type anything c...	Stressful	Stressful
2639	I'm literally not good at anything. I suck soc...	Stressful	Stressful
1797	Now boyfriend, inally over my ex who i o seeme...	Non-stressful	Stressful
130	Long, but need advice on money stress My husba...	Stressful	Stressful
2440	anyone else ugly as fuck and wanna die? i'm a ...	Stressful	Stressful
...	...	...	...
3122	Head and Eye Pressure Since October (for the l...	Stressful	Stressful
1832	Help with managing stress Hi All, I'm hoping f...	Stressful	Stressful
2382	Work is giving me stress I get criticised ever...	Stressful	Stressful
737	For those of you doing okay in school, how do ...	Stressful	Stressful
835	y'all ever just give up mid-day and zone the f...	Stressful	Stressful

178 rows × 3 columns

```
# Save DataFrame to a CSV file
df_sampled.to_csv('fewshot_predict.csv', index=False)
```

```
from sklearn.metrics import accuracy_score, precision_recall_fscore_support
accuracy = accuracy_score(df_sampled["label"], df_sampled["predict"])
precision, recall, f1, _ = precision_recall_fscore_support(df_sampled["label"], df_sampled["predict"], average="macro")

print(f"Accuracy: {accuracy}")
print(f"F1 score: {round(f1, 3)}")
```

```
Accuracy: 0.93
F1 score: 0.568
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Recall and F-sco
re are ill-defined and being set to 0.0 in labels with no true samples. Use `zero_division` parameter to control this beh
avior.
  _warn_prf(average, modifier, msg_start, len(result))
```

5) Plotting for Comparison
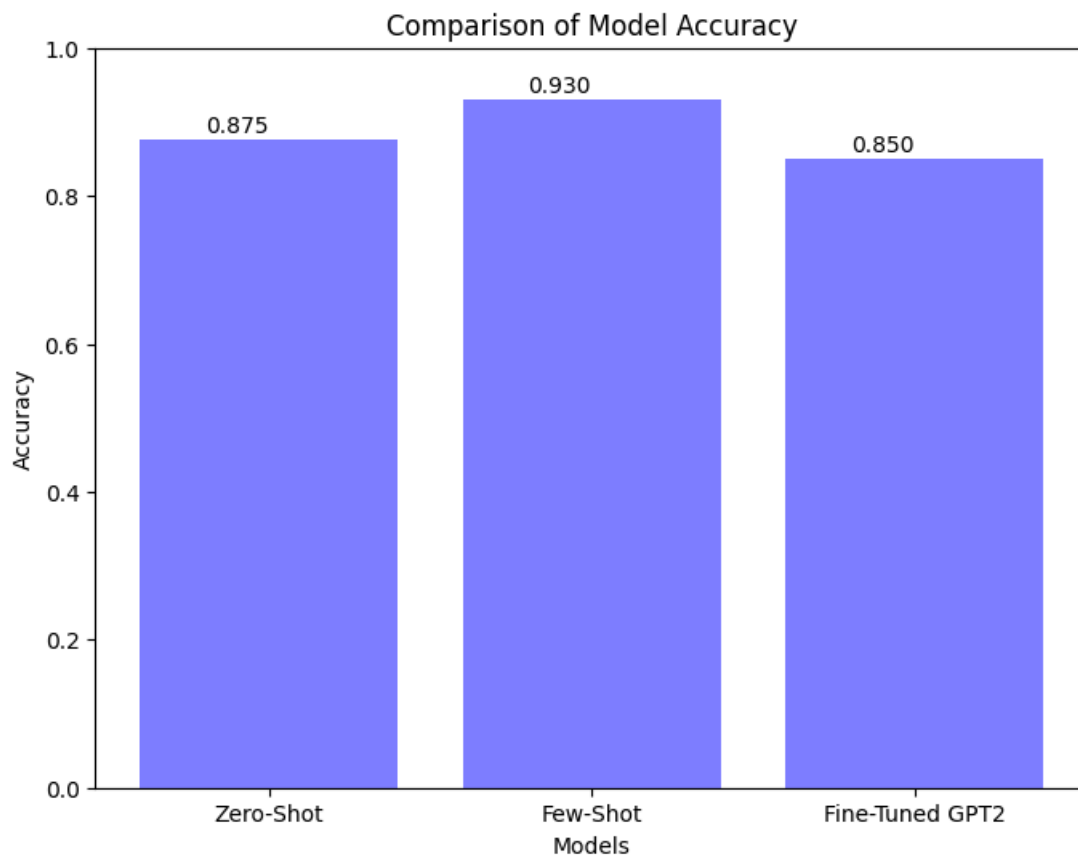
```
import matplotlib.pyplot as plt

# Data
labels = ['Zero-Shot', 'Few-Shot', 'Fine-Tuned GPT2']
accuracy = [0.875, 0.93, 0.85]
f1_score = [0.217, 0.568, 0.919]  # F1 score for fine-tuned LLM

# Plotting Accuracy
plt.figure(figsize=(8, 6))
bars = plt.bar(labels, accuracy, color='blue', alpha=0.5)
plt.xlabel('Models')
plt.ylabel('Accuracy')
plt.title('Comparison of Model Accuracy')
plt.ylim(0, 1)
# Adding text annotations
for bar, acc in zip(bars, accuracy):
    plt.text(bar.get_x() + bar.get_width() / 2 - 0.1, bar.get_height() + 0.01, f'{acc:.3f}', ha='center', color='black')
plt.show()

# Plotting F1 Score
plt.figure(figsize=(8, 6))
bars = plt.bar(labels, f1_score, color='blue', alpha=0.5)
plt.xlabel('Models')
plt.ylabel('F1 Score')
plt.title('Comparison of Model F1 Score')
plt.ylim(0, 1)
# Adding text annotations
for bar, f1 in zip(bars, f1_score):
    plt.text(bar.get_x() + bar.get_width() / 2 - 0.1, bar.get_height() + 0.01, f'{f1:.3f}', ha='center', color='black')
plt.show()
```
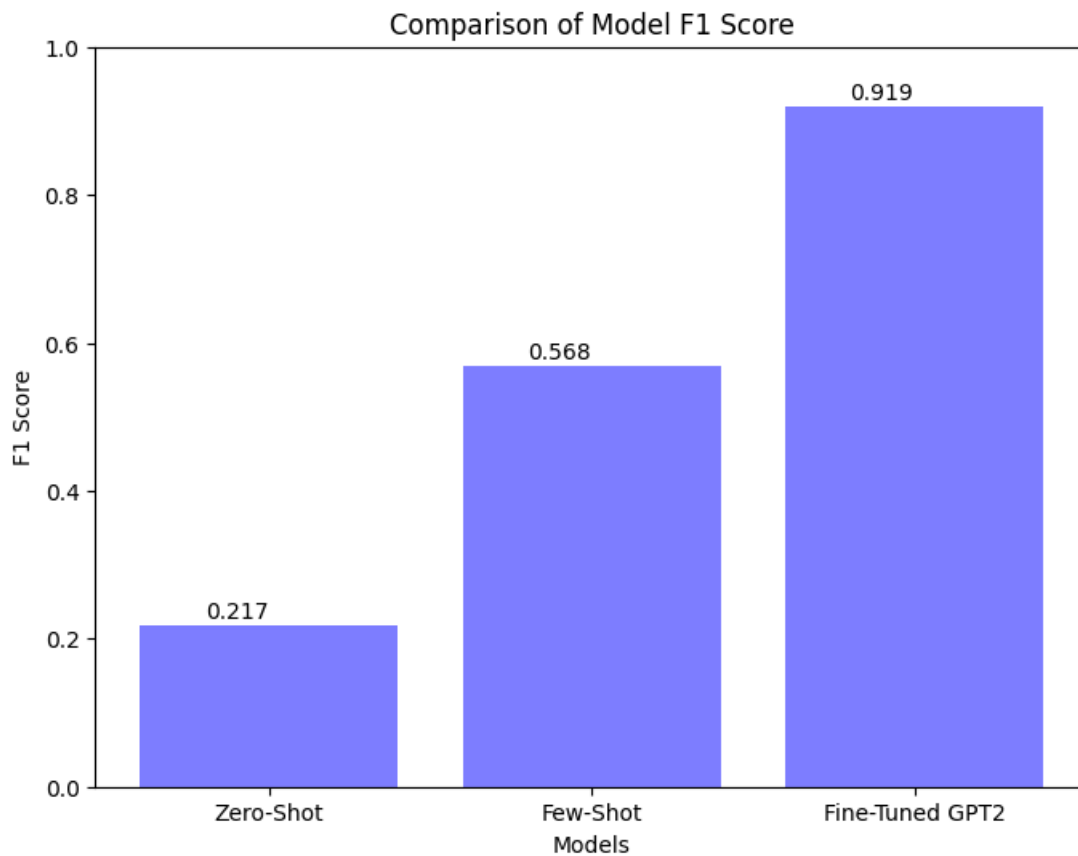
Comparison of Model F1 Score

In [ ]:

6) Actor-Critic

In [ ]:
```
!pip install openai==1.11.0
```

```
Collecting openai==1.11.0
  Downloading openai-1.11.0-py3-none-any.whl (226 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 226.0/226.0 kB 6.1 MB/s eta 0:00:00
Requirement already satisfied: anyio<5,>=3.5.0 in /usr/local/lib/python3.10/dist-packages (from openai==1.11.0) (3.7.1)
Requirement already satisfied: distro<2,>=1.7.0 in /usr/lib/python3/dist-packages (from openai==1.11.0) (1.7.0)
Collecting httpx<1,>=0.23.0 (from openai==1.11.0)
  Downloading httpx-0.27.0-py3-none-any.whl (75 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 75.6/75.6 kB 12.7 MB/s eta 0:00:00
Requirement already satisfied: pydantic<3,>=1.9.0 in /usr/local/lib/python3.10/dist-packages (from openai==1.11.0) (2.7.
0)
Requirement already satisfied: sniffio in /usr/local/lib/python3.10/dist-packages (from openai==1.11.0) (1.3.1)
Requirement already satisfied: tqdm>4 in /usr/local/lib/python3.10/dist-packages (from openai==1.11.0) (4.66.2)
Requirement already satisfied: typing-extensions<5,>=4.7 in /usr/local/lib/python3.10/dist-packages (from openai==1.11.0)
(4.11.0)
Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.10/dist-packages (from anyio<5,>=3.5.0->openai==1.11.
0) (3.7)
Requirement already satisfied: exceptiongroup in /usr/local/lib/python3.10/dist-packages (from anyio<5,>=3.5.0->openai==
1.11.0) (1.2.0)
Requirement already satisfied: certifi in /usr/local/lib/python3.10/dist-packages (from httpx<1,>=0.23.0->openai==1.11.0)
(2024.2.2)
Collecting httpcore==1.* (from httpx<1,>=0.23.0->openai==1.11.0)
  Downloading httpcore-1.0.5-py3-none-any.whl (77 kB)
  ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 77.9/77.9 kB 11.8 MB/s eta 0:00:00
Collecting h11<0.15,>=0.13 (from httpcore==1.*->httpx<1,>=0.23.0->openai==1.11.0)
  Downloading h11-0.14.0-py3-none-any.whl (58 kB)
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Requirement already satisfied: annotated-types>=0.4.0 in /usr/local/lib/python3.10/dist-packages (from pydantic<3,>=1.9.0
->openai==1.11.0) (0.6.0)
Requirement already satisfied: pydantic-core==2.18.1 in /usr/local/lib/python3.10/dist-packages (from pydantic<3,>=1.9.0-
>openai==1.11.0) (2.18.1)
Installing collected packages: h11, httpcore, httpx, openai
Successfully installed h11-0.14.0 httpcore-1.0.5 httpx-0.27.0 openai-1.11.0
```

In [ ]:
```
import getpass

OPENAI_API_KEY = getpass.getpass() #input: API KEY
..........
```

In [ ]:
```
import openai
from openai import OpenAI
```

```python
openai.api_key = OPENAI_API_KEY

client = OpenAI(
    api_key=openai.api_key,
)
```

In [ ]:
```python
import pandas as pd

df = pd.read_csv('/content/generated_stressful.csv')
df
```

Out[ ]:

	Body_Title	label	More Stressful	Less Stressful
0	Is there a light at the end of the tunnel? I'v…	1	Is there any light at the end of this never-en…	Text: Is there a light at the end of the tunne…
1	We only see those who get better Aka survivors…	1	Rewrite the following text 1 times to make it …	Text: We also need to acknowledge those who ha…
2	I miss the old me I've forgotten what genuine …	1	Text: I miss the old me I've forgotten what ge…	Rewrite:\nI remember the old me, and I miss th…
3	Baby boy born 10 01 P.M. on Father's Day! Who …	0	Text: Baby boy born 10 01 P.M. on Father's Day…	Rewritten text: Baby boy born at 10:01 PM on F…
4	Huh…the human mind is interesting… I don't…	1	Text: Oh no, the human mind is so confusing……	Rewrite:\n Hmm…the human mind is …
5	I'll tell my deepest, darkest secrets to stran…	1	I reveal my innermost secrets to complete stra…	Text: I'm comfortable sharing my deepest thoug…
6	How do you get over overthinking??? Ever since…	0	Rewrite the following text 1 times to make it …	Text: I sometimes tend to overthink things, bu…
7	Annus Horribilus Today is the anniversary of m…	1	Today is the anniversary of my daughter's deat…	Non-stressful version: Annus Horribilus Today …
8	Stress in school I need help with coping with …	1	Stressed in school! Help needed urgently to co…	Rewrite: Dealing with challenges in school I c…
9	It's Happening Again I can feel it. Building i…	1	I can feel it happening again. Consuming me fr…	Text: It's happening again. I can feel it. Bui…

In [ ]:
```python
text = df['More Stressful'].iloc[0]
text
```

Out[ ]:
"Is there any light at the end of this never-ending tunnel of stress? I've been relentlessly battling with chronic stress for about 3 agonizing weeks now. I want to scream that the cause of it is my job. It's the only thing that makes sense in this chaotic mess. Due to the pandemic, I've been tossed around like a rag doll through 4 different positions within the past 3 months. My once-beloved regular position that I held before all this turmoil happened feels like a distant dream. When everything fell apart back in March, until about the middle of May, I was tossed around to two other positions that were somewhat bearable, but the hours were soul-crushing. But now, this new role that I've been trapped in for about a month is slowly suffocating me. It's an unforgiving nightmare, the days stretch endlessly, a relentless race against the clock, dealing with difficult people who only add to my mounting stress. I keep desperately clinging to the hope that it's only temporary, and maybe, just maybe, I'll be able to reclaim my old job as things start to normalize. But for the past 3 weeks, my body and mind have been bombarded with a relentless onslaught of symptoms: A heavy, suffocating weight on my chest (most agonizing symptom), persistent lightheadedness and dizziness, an unrelenting tightness in my neck and shoulders, lower back pain, unshakeable anxiety, a racing heartbeat, acid reflux and heartburn, stomach issues, and unending fatigue. I've attempted to make small changes by adjusting my diet to something healthier. I've been desperately grasping at breathing exercises and stretching in the evenings when I stumble home from work, hoping for some semblance of relief. It seems to provide a flicker of respite. I also plan to drag myself back to the gym, because I know deep down that exercise might offer some solace. Yet, I'm plagued with the relentless doubt - will this agony ever fade away, or am I doomed to endure this torment indefinitely? I've experienced a similar turmoil once before, about a month before my daughter's birth. Miraculously, all the pain vanished right after she arrived. It sounds like a twisted joke, but maybe the arrival of major life changes is my curse? Strangely, I didn't feel this way when I got married or bought a house or any of that. Any wisdom or advice to navigate through this unending nightmare would be a beacon"

In [ ]:
```python
generated_text = []

# generate texts as an actor
prompt = "Give the person who wrote the following text some suggestions."
response = openai.chat.completions.create(model="gpt-3.5-turbo", messages=[{"role": "user", "content": prompt + text}])
generated = response.choices[0].message.content.strip()
generated_text.append(generated)

# run critique scenario twice
critique_prompt = "Critique this text regarding its clarity and whether it offers practical advice and emotional support.
        Then rewrite the text incorporating these critiques to enhance its overall quality: "
for i in range(1, 3):
    response = openai.chat.completions.create(model="gpt-3.5-turbo", messages=[{"role": "user", "content": critique_promp
    generated = response.choices[0].message.content.strip()
    generated_text.append(generated)
```

In [ ]:
```python
'Initial text:', generated_text[0]
```

`Out[ ]:` ('Initial text:',
"1. Seek professional help: Consider speaking with a therapist or counselor to work through your feelings of chronic stress and anxiety. Therapy can provide helpful coping mechanisms and strategies to manage your symptoms.\n\n2. Communicate with your employer: Have an open and honest conversation with your employer about how you are feeling. They may be able to provide support or accommodations to help alleviate some of your stress.\n\n3. Prioritize self-care: Make time for activities that help you relax and unwind, such as mindfulness meditation, yoga, or spending time in nature. Taking care of your physical and mental health is crucial during stressful times.\n\n4. Explore new job opportunities: If your current role is causing you extreme stress and discomfort, explore the possibility of finding a new job that better aligns with your skills and values. It's important to prioritize your well-being and happiness in your career.\n\n5. Lean on your support system: Reach out to friends and family members for emotional support and encouragement. Having a strong support system can make a difference in how you navigate through difficult times.\n\n6. Be patient with yourself: Remember that healing from chronic stress takes time, and it's okay to have setbacks along the way. Be kind to yourself and celebrate small victories as you work towards overcoming this challenging period.")

`In [ ]:` `'Critique #1:', generated_text[1]`

`Out[ ]:` ('Critique #1:',
"This text is clear in its recommendations for managing chronic stress and anxiety, offering practical advice and emotional support. However, it could benefit from a more empathetic tone to better connect with the reader's emotions. \n\nRewritten version:\nDealing with chronic stress and anxiety can be overwhelming, but there are steps you can take to support your mental health and well-being during difficult times:\n1. Seek professional help: It's important to prioritize your mental health. Consider reaching out to a therapist or counselor who can provide coping mechanisms and strategies to manage your symptoms.\n\n2. Open up to your employer: Having an honest conversation with your employer about how you're feeling can lead to support and accommodations that can help reduce your stress levels.\n\n3. Take time for self-care: Make it a priority to engage in activities that help you relax and recharge. Whether it's practicing mindfulness meditation, doing yoga, or spending time in nature, taking care of your physical and mental health is crucial during stressful times.\n\n4. Explore new opportunities: If your current job is causing you extreme stress, consider exploring new job opportunities that better align with your skills and values. Prioritizing your well-being and happiness in your career is essential.\n\n5. Lean on your support system: Reach out to friends and family for emotional support and encouragement. Having a strong support system can make a significant difference in how you navigate through challenging times.\n\n6. Be patient and kind to yourself: Remember that healing from chronic stress takes time. It's okay to have setbacks along the way, so be patient with yourself and celebrate small victories as you work towards overcoming this challenging period.")

`In [ ]:` `'Critique #2:', generated_text[2]`

`Out[ ]:` ('Critique #2:',
"Dealing with chronic stress and anxiety can be incredibly challenging, but there are steps you can take to prioritize your mental health and well-being during tough times:\n\n1. Seek professional help: It's crucial to put your mental health first. Consider reaching out to a therapist or counselor who can provide coping mechanisms and strategies to help manage your symptoms.\n\n2. Open up to your employer: Having an honest conversation with your employer about how you're feeling can lead to support and accommodations that may help alleviate your stress levels.\n\n3. Take time for self-care: Make self-care a priority by engaging in activities that help you relax and rejuvenate. Whether it's practicing mindfulness meditation, doing yoga, or enjoying time outdoors, taking care of your physical and mental health is essential during times of stress.\n\n4. Explore new opportunities: If your current job is causing excessive stress, consider exploring new job opportunities that better align with your skills and values. Prioritizing your well-being and happiness in your career is crucial.\n\n5. Lean on your support system: Reach out to friends and family for emotional support and encouragement. Having a strong support system can make a significant difference in how you navigate through challenging times.\n\n6. Be patient and kind to yourself: Remember that healing from chronic stress is a process that takes time. It's okay to have setbacks along the way, so be patient with yourself and celebrate small victories as you work towards overcoming this challenging period. Remember, you're not alone, and it's okay to ask for help.")

`In [ ]:`