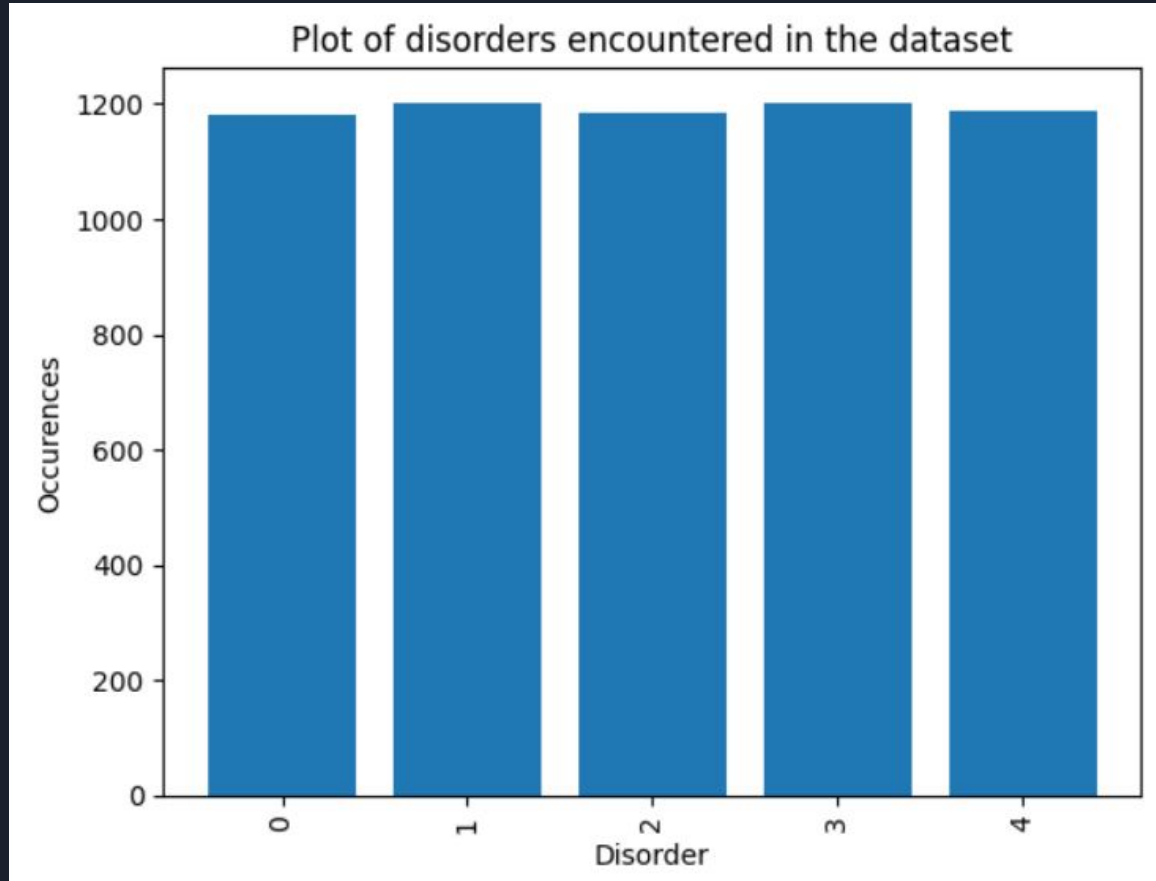# Social Media Mental Health Disorder Classification

- Presentation -

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Plot of disorders encountered in the dataset

0 - Stress

1 - Depression

2 - Bipolar disorder

3 - Personality disorder

4 - Anxiety

Preprocessing

- Lemmatization

- Stop Words

- Number of Features

- Explaining Emojis

- Tokenizing the Tweets

- CountVectorizer vs TFIDF-Vectorizer

Preprocessing Grid Search

Multinomial Naive Bayes

best accuracy = 0.7957

CountVectorizer

max_features = 5000

filter_stop_words = True

use_lemmas = True

explain_emojis = True

Models

Random Forest Classifier

XGBoost

Light GBM

Support Vector Classifier

Recurrent Neural Network

Gradient Boosting Classifier

BERT

Model	Best Accuracy
RNN	0.6354854466524456
BERT	0.5866785575698775
Light Gradient Boosting Machine	**0.8430335097001763**
Gradient Boosting Classifier	0.7901234567901234
Random Forest Classifier	0.8405017921146953
Support Vector Classifier	0.6953405017921147
XGBoost	0.8218694885361552

BERT
Acc: 0.5866785575698775
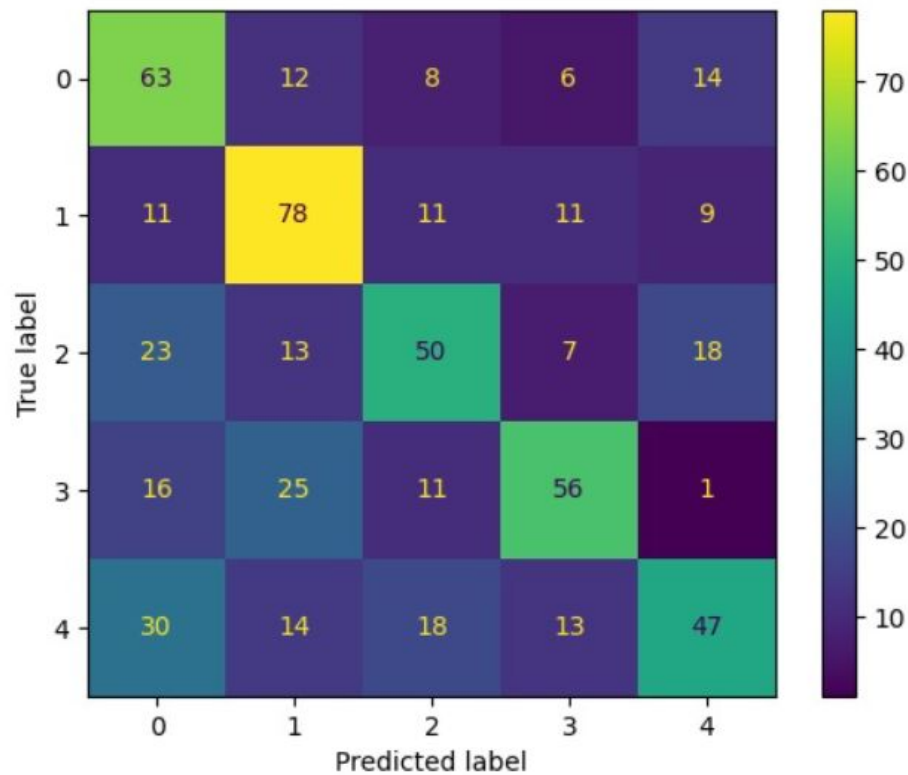
BERT

Legend: ■ Negative ■ Neutral ■ Positive

True Label	Predicted Label		Attribution Label	Attribution Score	Word Importance
1	1 (0.85)	I'm struggling I've been depressed my whole life. I remember when I was in elementary I felt like I didn't want to be alive anymore, I couldn't see I point. As I grew up I became better at convincing my self that I should hang on just a little more. Like maybe after this next game comes out or or after I see this movie etc... but I'm now 23 and the coping mechanism I've developed are starting to fail me now. And I struggle with finding anything else to keep me from going over the edge and ending it all. It has gotten to the point where I was waiting for a train the other day and I heard the train coming and for a second I felt the urge like my body tending up waiting to move as if to jump in front of the train. I ended up thinking to much and didn't jump but the feeling was real and I was scared. I don't know what to do anymore.		5.58	[CLS] i ' m struggling i ' ve been depressed my whole life . i remember when i was in elementary i felt like i didn ' t want to be alive anymore , i couldn ' t see i point . as i grew up i became better at convincing my self that i should hang on just a little more . like maybe after this next game comes out or or after i see this movie etc ... but i ' m now 23 and the coping mechanism i ' ve developed are starting to fail me now . and i struggle with finding anything else to keep me from going over the edge and ending it all . it has gotten to the point where i was waiting for a train the other day and i heard the train coming and for a second i felt the urge like my body tending up waiting to move as if to jump in front of the train . i ended up thinking to much and didn ' t jump but the feeling was real and i was scared . i don ' t know what to do anymore . [SEP]

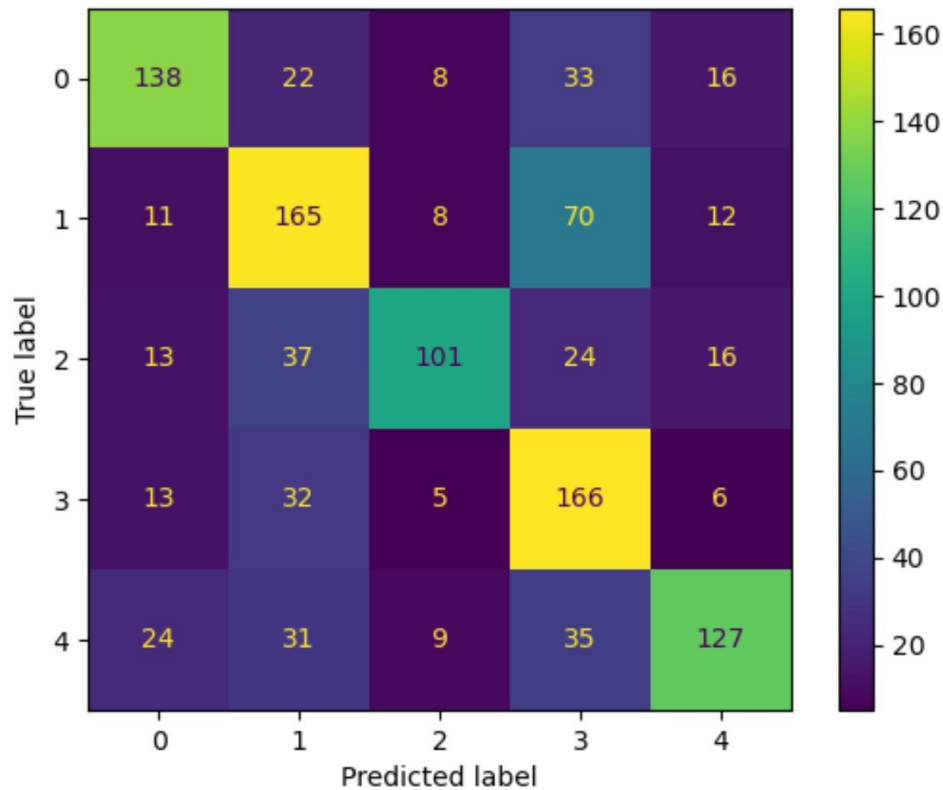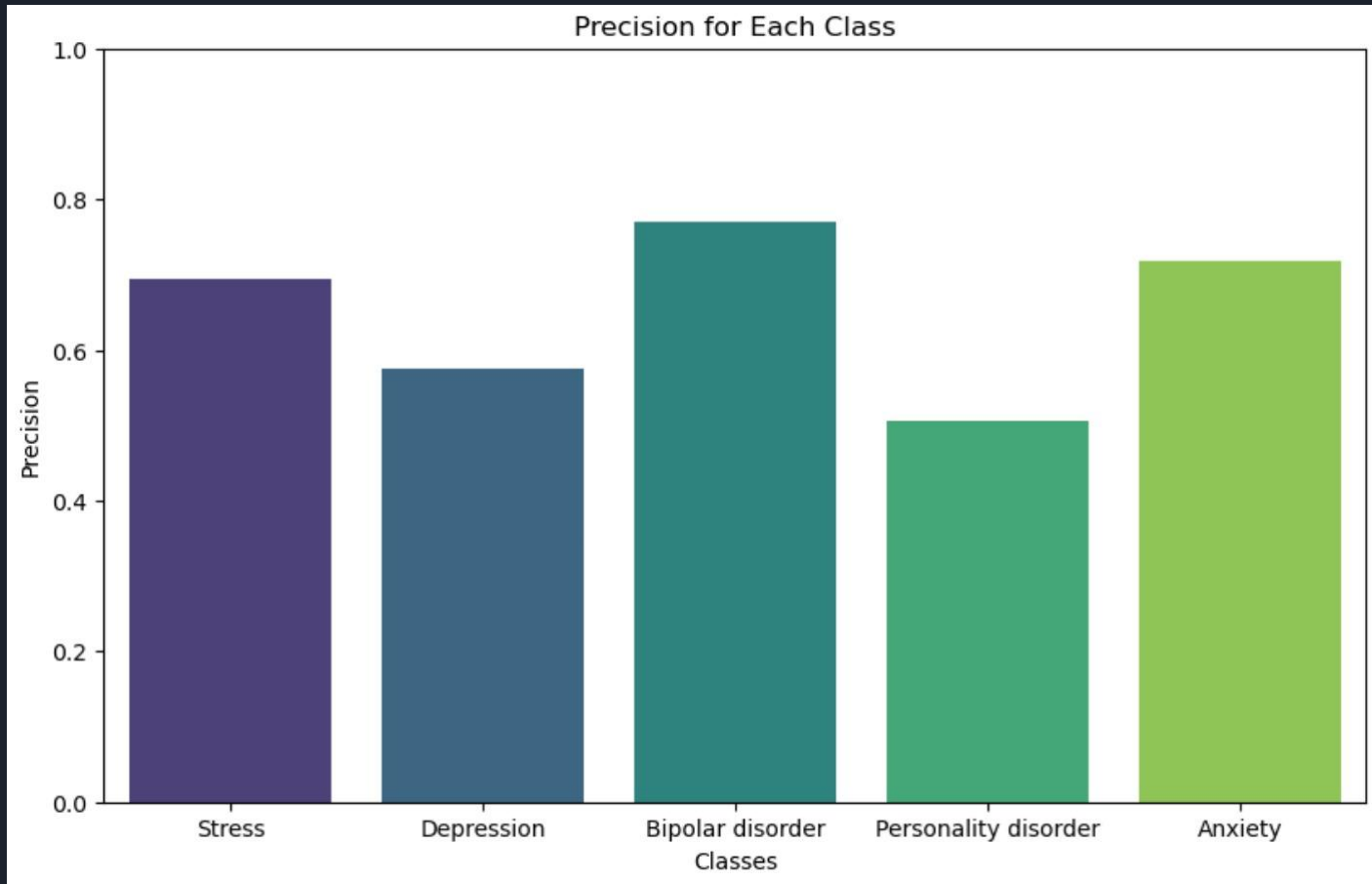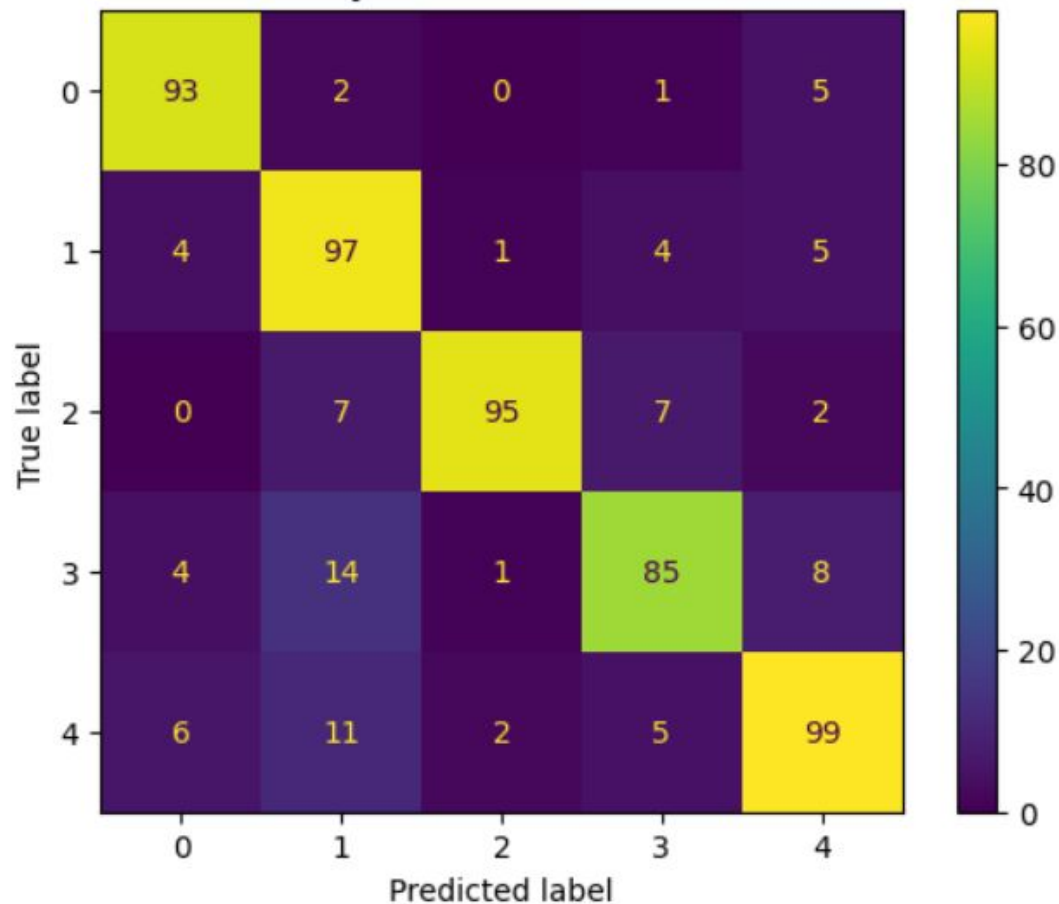| True Label	Predicted Label		Attribution Label	Attribution Score	Word Importance
4	4 (0.62)	Im so confused about my anxiety Im 18 and i used to always have rlly bad episodes where I felt like I was physically sick I couldn't sleep breath or my heart didn't work properly. I started medication about a year ago and for the most part like everything basicallt stopped since I never was like a thinking anxiety much type of person. But now idk I feel like I lost so much of myself due to not having anxiety in a way idk how to describe it. Besides from my emotions not being so severe which is good but also not what I'm used to. As well as my grades are doing so bad and I have a constant thought of the world not being real. I literally have no modivation about school and I'm doing so bad to my standards of what I'm used to. I'm not sad but I'm not happy either, and things do not excite me as much I guess. I also feel like I never had anxiety despite being diagnosed by 3 different people. I feel like I have so much to say and I think so much about life and different things but I don't at the same time. It's really confusing for me and I just wanted go share somewhere		5.66	[CLS] im so confused about my anxiety im 18 and i used to always have r ##lly bad episodes where i felt like i was physically sick i couldn ' t sleep breath or my heart didn ' t work properly . i started medication about a year ago and for the most part like everything basic ##all ##t stopped since i never was like a thinking anxiety much type of person . but now id ##k i feel like i lost so much of myself due to not having anxiety in a way id ##k how to describe it . besides from my emotions not being so severe which is good but also not what i ' m used to . as well as my grades are doing so bad and i have a constant thought of the world not being real . i literally have no mod ##ivation about school and i ' m doing so bad to my standards of what i ' m used to . i ' m not sad but i ' m not happy either , and things do not ex ##cite me as much i guess . i also feel like i never had anxiety despite being diagnosed by 3 different people . i feel like i have so much to say and i think so much about life and different things but i don ' t at the same time . it ' s really confusing for me and i just wanted go share somewhere [SEP]

Precision for Each Class

LightGBM
Accuracy: 0.8430335097001763