- Leveraging Logistic Regression for Sentiment Classification

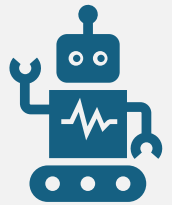
Sentiment Analysis for Mental Health Monitoring

Sri Kalyan Reddy Akiti
A04318423

Problem Statement

MENTAL HEALTH IS CRITICAL FOR WELL-BEING.

CHALLENGES IN IDENTIFYING MENTAL HEALTH ISSUES EARLY.

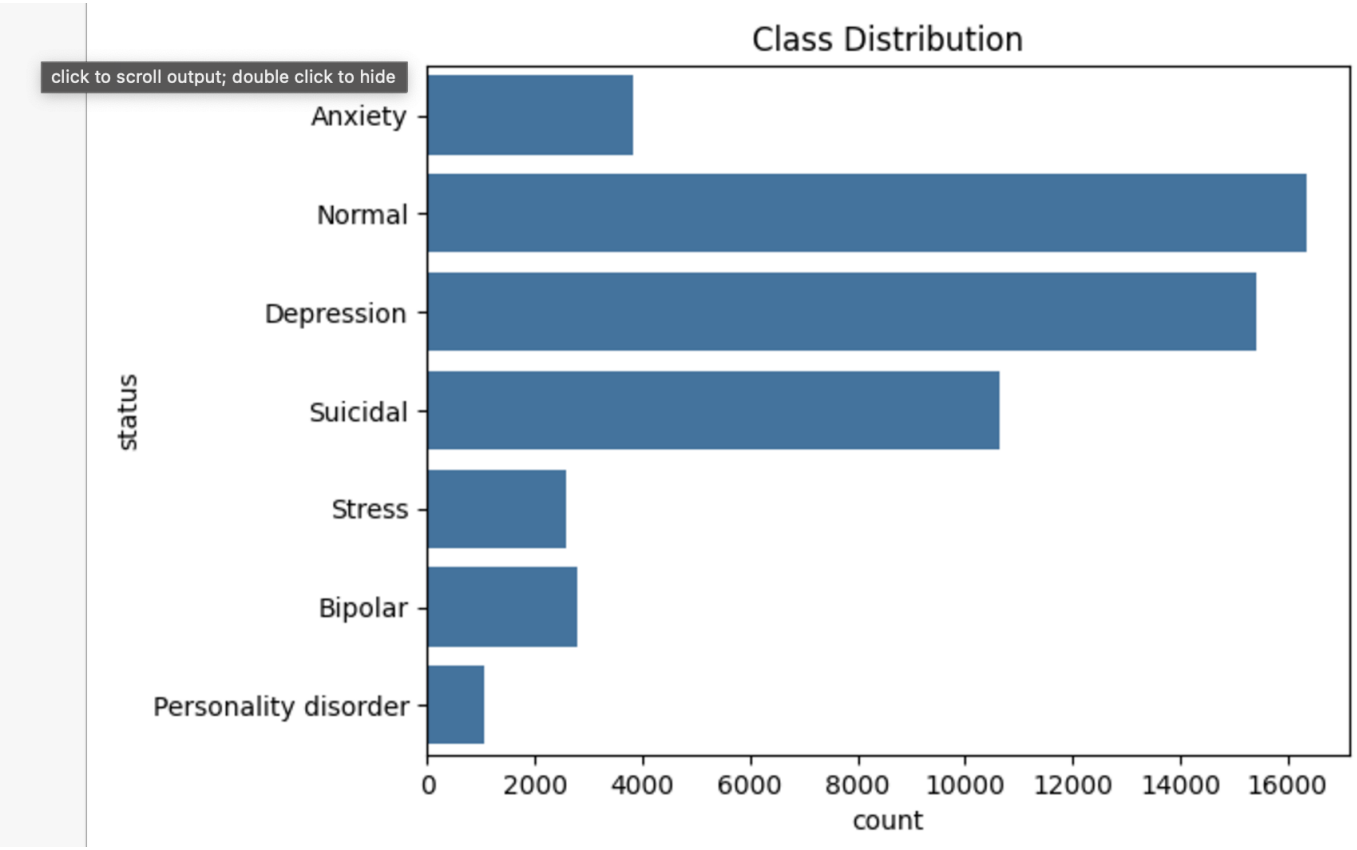


NEED FOR AUTOMATED TOOLS TO CLASSIFY MENTAL HEALTH-RELATED SENTIMENTS.

Dataset

- **Columns**: `statement` (text) and `status` (mental health category).
- **Categories**: Anxiety, Bipolar, Depression, Normal, Personality Disorder, Stress, Suicidal.

	statement	status
0	oh my gosh	Anxiety
1	trouble sleeping, confused mind, restless hear...	Anxiety
2	All wrong, back off dear, forward doubt. Stay ...	Anxiety
3	I've shifted my focus to something else but I'...	Anxiety
4	I'm restless and restless, it's been a month n...	Anxiety



Data cleaning

Methodology

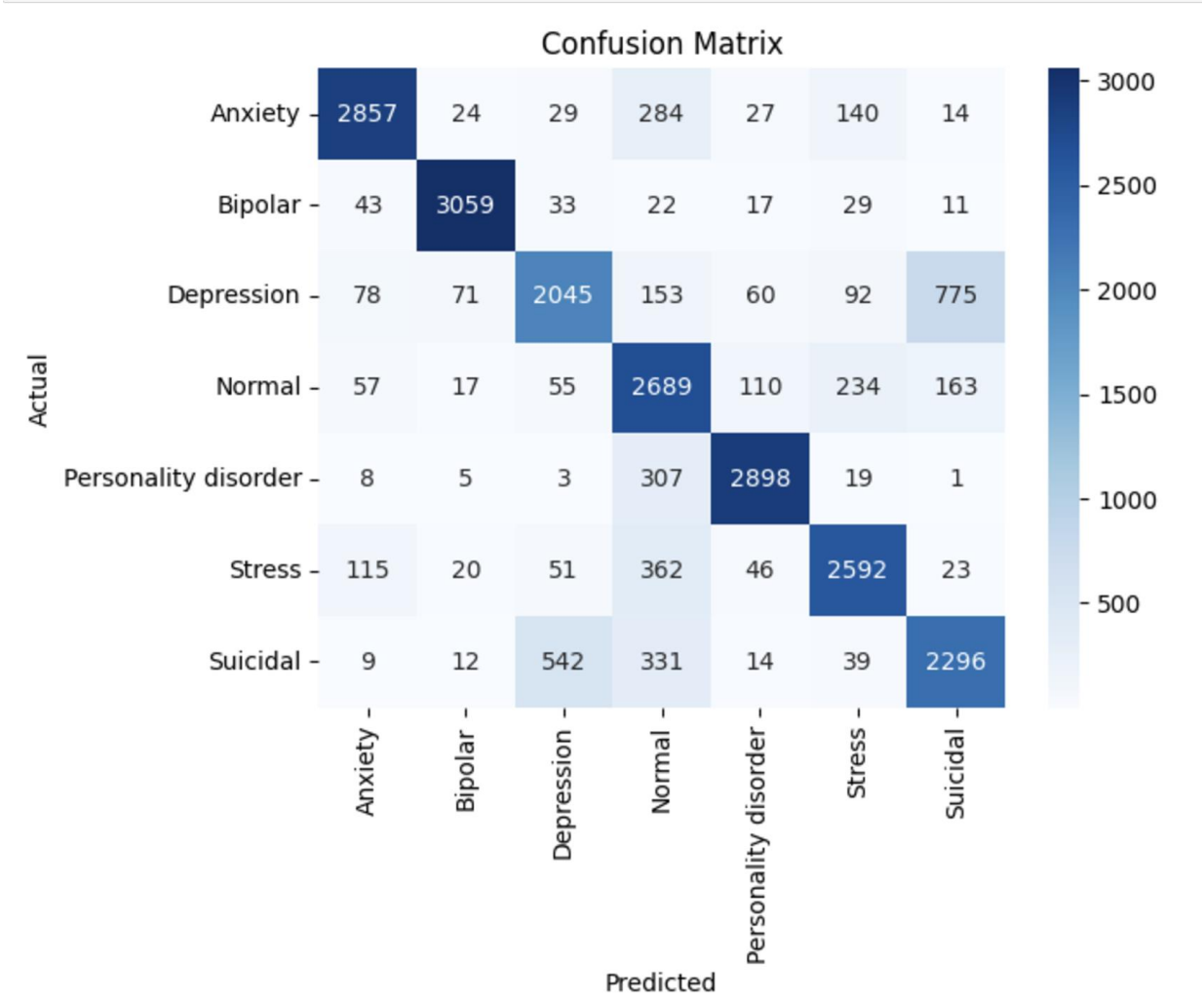
Text Preprocessing:	• Cleaned and standardized text to focus on meaningful words.
Feature Extraction:	• Used TF-IDF vectorization to convert text into numerical format.
Model Training:	• Trained Logistic Regression model on processed data.
Prediction Function:	• Developed a function to predict the mental health category for new sentences.

Out Puts:

Classification Report:

	precision	recall	f1-score	support
Anxiety	0.90	0.85	0.87	3375
Bipolar	0.95	0.95	0.95	3214
Depression	0.74	0.62	0.68	3274
Normal	0.65	0.81	0.72	3325
Personality disorder	0.91	0.89	0.90	3241
Stress	0.82	0.81	0.82	3209
Suicidal	0.70	0.71	0.70	3243
accuracy			0.81	22881
macro avg	0.81	0.81	0.81	22881
weighted avg	0.81	0.81	0.81	22881

Confusion Matrix



Example statements to predict status

Original Statement: My heart races, and I feel like something bad will happen soon.
Actual Label: Anxiety
Predicted State: Anxiety

Original Statement: i have two thoughts on one work
Actual Label: Bipolar
Predicted State: Normal

Original Statement: I feel empty and struggle to find joy in anything these days.
Actual Label: Depression
Predicted State: Depression

Original Statement: I’m feeling good.
Actual Label: Normal
Predicted State: Normal

Original Statement: I often feel misunderstood and find it hard to maintain close relationships.
Actual Label: Personality disorder
Predicted State: Personality disorder

Original Statement: My workload is too heavy, and I can’t seem to keep up with everything.
Actual Label: Stress
Predicted State: Stress

Original Statement: Iam about to die.
Actual Label: Suicidal
Predicted State: Suicidal

Conclusion

- Successfully built a Logistic Regression model for sentiment analysis.
- Achieved 81% accuracy in predicting mental health statuses.

Future Work