ABSTRACT

Depression is one of the mental health disorders that continues to increase, especially among teenagers and active social media users. Many social media users, such as Twitter, express their emotional condition through text posts without realizing it can reflect symptoms of depression. Based on this phenomenon, it is necessary to develop an early detection system to identify indications of depression from user posts on social media. The main problem raised in this study is how to automatically detect symptoms of depression through language analysis in social media texts with a precise and accurate approach.

The solution proposed in this final project is to build a web-based early detection system for depression by implementing the Natural Language Processing (NLP) method and the BERT (Bidirectional Encoder Representations from Transformers) model. This system works by analyzing user Twitter posts and classifying them into negative, neutral, or positive sentiment categories using sentiment analysis techniques. The implementation process includes model training using labeled datasets, creating APIs with FastAPI, and integrating with Laravel-based web applications that function as user interfaces. The system is also equipped with analysis history storage features and data security according to regulations.

The test results show that the system is able to classify sentiment with an accuracy of 82%, and has consistent precision, recall, and F1-score values in each category. This evaluation shows that the model has quite good performance and can be relied on as a tool in early detection of depression symptoms through social media. The developed system is expected to be used as an alternative non-clinical support in increasing awareness and rapid response to mental health issues.

Keyword **:** Sentiment Analysis, BERT, Depression, Mental Health, Machine Learning, Social Media, NLP, Twitter, Website