

ABSTRACT

This research focuses on the comparison of two neural network models in detecting emotions in Indonesian social media texts, namely Recurrent Neural Network (RNN) and Bidirectional Long Short-Term Memory (BiLSTM). Given the importance of emotion analysis in social media texts to understand public sentiment, this study utilizes the Emotion Indonesian Public Opinion dataset consisting of 7.080 text data, which includes six emotion categories namely anger, fear, joy, love, neutral, and sadness. This data was collected through human translation and annotation methods from the X platform. And combined with using a dataset of crawling results from platform X consisting of 1.300 text data.

The initial process in this research involves cleaning and processing the text data, such as tokenization and removal of irrelevant words, so that it can be used for model training. Next, RNN and BiLSTM models were developed to analyze emotion patterns in the text. The RNN model is designed to process sequential data, while the BiLSTM, which is more advanced, can capture context in both forward and backward directions to provide a deeper understanding of the relationships between words. The evaluation results show that the BiLSTM model consistently delivers significantly better performance than RNN, both in terms of accuracy and F1-score. The standard RNN architecture has proven to be prone to training failures, while BiLSTM demonstrates superior reliability. In conclusion, although BiLSTM has higher complexity and training time, its ability to effectively capture context makes it a more robust and accurate model for emotion classification on social media text data.

The multi-scenario experiments conducted showed that the BiLSTM architecture is fundamentally superior to RNN, although the addition of the Self-Attention mechanism proved to significantly improve RNN performance. In the final comparison, the lighter and more efficient BiLSTM configuration (“less is more”) proved to be the most superior and consistent model. This best model, with a 1-layer architecture and 64 hidden units, achieved a final test accuracy of 65.27% with an F1-score (Macro) of 0.66. This study concludes that the balance between a

robust base architecture and complexity optimization is key to achieving robust performance.

Keywords: *emotion detection, media social text, rnn, bilstm, sentiment analysis*