INTISARI

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Analisis sentimen pada bidang software engineering memiliki kegunaan, antara lain mendeteksi komen negatif pada API dan mendapatkan rekomendasi jawaban terkait perbaikan source code dan library. Platform seperti Stack Overflow menyediakan data berharga untuk analisis sentimen, meskipun kata-kata yang digunakan oleh developer sering kali sulit diinterpretasikan dengan tepat oleh model analisis sentimen tradisional. Oleh karena itu, diperlukan pendekatan lain dalam memahami konteks teks. Penelitian ini membahas terkait dampak Bidirectional Long Short-Term Memory (LSTM) dengan *Attention Mechanism* dalam melakukan analisis sentimen dalam bidang software engineering.

Penelitian ini bertujuan membandingkan dan mengevaluasi kinerja model LSTM yang dilengkapi dengan attention mechanism dan bidirectional layer untuk analisis sentimen pada dataset Stack Overflow. Selain itu, penelitian ini juga bertujuan mengevaluasi perbedaan performa antara model yang diusulkan dengan model BERT yang telah diuji sebelumnya.

Hasil evaluasi dan komparasi menunjukkan bahwa model LSTM yang dilengkapi attention mechanism dan bidirectional layer tidak memberikan peningkatan yang signifikan, yaitu dengan average weighted F1 skor 79.45%. Disisi lain, Bidirectional LSTM mampu mendapatkan performa yang lebih tinggi, yaitu 81.10%. Namun, keempat model LSTM tersebut masih belum dapat menyaingi performa BERT, yaitu 89.24%.

Kata Kunci : Analisis Sentimen, Stack Overflow, LSTM, Attention, Bidirectional

ABSTRACT

Attention Bidirectional Long Short-Term Memory for Sentiment Analysis on Stack Overflow Dataset

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Sentiment analysis in the field of software engineering is useful for detecting negative comments on APIs and obtaining recommended answers related to source code and library improvements. Platforms like Stack Overflow provide valuable data for sentiment analysis, although the language used by developers is often challenging for traditional sentiment analysis models to interpret accurately. Therefore, an alternative approach is needed to understand the context of the text. This study explores the impact of Bidirectional Long Short-Term Memory (LSTM) with an Attention Mechanism in performing sentiment analysis within the field of software engineering.

The research aims to compare and evaluate the performance of an LSTM model equipped with an attention mechanism and bidirectional layers for sentiment analysis on a Stack Overflow dataset. Additionally, the study aims to assess the performance differences between the proposed model and a previously tested BERT model.

The evaluation and comparison results indicate that the LSTM model with an attention mechanism and bidirectional layers does not provide a significant improvement, achieving an average weighted F1 score of 79.45%. On the other hand, the Bidirectional LSTM (BILSTM) model achieves a higher performance, with a weighted F1 score of 81.10%. Nevertheless, all four LSTM-based models still fall short of the performance demonstrated by the BERT model, which achieves a weighted F1 score of 89.24%.

Keywords : Sentiment Analysis, Stack Overflow, LSTM, Attention, Bidirectional