

INTISARI

Klasifikasi Sentimen Multi-Domain pada Ulasan Publik Indonesia dengan Kombinasi Bi-LSTM dan *Domain-Aware Embedding and Attention*

Oleh

DENISA

23/530250/PPA/06722

Penelitian ini mengusulkan model Klasifikasi Sentimen Multi-Domain pada ulasan publik Indonesia menggunakan kombinasi Bidirectional LSTM (Bi-LSTM) dan *Domain-Aware Embedding and Attention*. Fokus penelitian ini adalah mengatasi rendahnya kemampuan generalisasi model-model sentimen konvensional yang umumnya hanya bekerja baik pada *single domain* dan gagal pada *cross-domain*. Dataset yang digunakan mencakup lima domain berbeda (BRI, Pos Indonesia, Telkom, Umum, dan Dataset Baru), dengan Dataset Baru tidak dilibatkan pada pelatihan untuk mengukur kemampuan generalisasi.

Model yang dikembangkan dibandingkan dengan sepuluh arsitektur lain, baik yang menggunakan mekanisme *attention* maupun tanpa *attention*, serta model berbasis BERT. Hasil pengujian menunjukkan bahwa model dengan mekanisme *domain-aware* konsisten lebih stabil dan adaptif dibandingkan model tanpa *domain-aware*. Pada skenario multi-domain, model BiLSTM+Attention mencapai performa rata-rata tinggi ($F1 = 0.8718$), mendekati model terbaik CNN-BiLSTM ($F1 = 0.8774$), namun lebih unggul dalam stabilitas antar domain dengan nilai *Standar Deviasi* paling rendah (0.01310) menunjukkan bahwa model ini tidak mengalami fluktuasi besar ketika berpindah domain. Model *domain-aware* juga menunjukkan keunggulan generalisasi pada Dataset Baru, dengan performa mencapai F1 hingga 0.9735, lebih tinggi dibandingkan sebagian besar model *non-domain-aware* lainnya.

Sebaliknya, model berbasis CNN seperti CNN-BiLSTM dan CNN+Attention unggul pada teks pendek dan eksplisit, sementara model BERT cenderung kurang optimal karena karakteristik ulasan Indonesia yang banyak mengandung bahasa informal. Secara keseluruhan, penelitian ini membuktikan bahwa penggabungan Bi-LSTM, *Attention*, dan *Domain-Aware Embedding* merupakan pendekatan yang efektif untuk meningkatkan konsistensi dan kemampuan adaptasi model sentimen multidomain, sesuai dengan tujuan penelitian "*Klasifikasi Sentimen Multi-Domain pada Ulasan Publik Indonesia dengan Kombinasi Bi-LSTM dan Domain-Aware Embedding and Attention*".

Kata Kunci : **Klasifikasi Sentimen Multi-Domain, Bi-LSTM, *Attention*, *Domain-Aware Embedding*.**

ABSTRACT

Multi-Domain Sentiment Classification of Indonesian Public Reviews Using Bi-LSTM with Domain-Aware Embeddings and Attention

by

DENISA

23/530250/PPA/06722

This research proposes a Multi-Domain Sentiment Classification model for Indonesian public reviews using a combination of Bidirectional LSTM (Bi-LSTM) and Domain-Aware Embedding with Attention. The study addresses the limited generalization capability of conventional single-domain sentiment models, which often fail when applied to cross-domain data, particularly in Indonesian language contexts where multidomain studies remain scarce. The dataset covers five distinct domains BRI, Pos Indonesia, Telkom, General, and a New Dataset (unseen during training) to evaluate both in-domain performance and generalization ability.

The proposed model was compared against ten alternative architectures, including attention-based and non-attention variants, as well as BERT-based models. Experimental results show that domain-aware models consistently outperform non-domain-aware models in stability and adaptability. In the multidomain scenario, the proposed BiLSTM+Attention model achieves a high average F1-score of 0.8718, closely matching the best-performing CNN-BiLSTM (F1 = 0.8774). However, BiLSTM+Attention demonstrates the highest stability across domains, evidenced by its lowest standard deviation (SD = 0.1310), indicating minimal performance fluctuation when shifting between domains. The model also exhibits strong generalization capability, achieving up to F1 = 0.9735 on the unseen New Dataset, outperforming most non-domain-aware models.

While CNN-based models such as CNN-BiLSTM and CNN+Attention excel in short and explicit text structures, BERT-based models show suboptimal results due to the informal and highly varied linguistic patterns found in Indonesian reviews. Overall, the findings confirm that integrating Bi-LSTM, Attention, and Domain-Aware Embedding provides an effective and robust approach for multidomain sentiment classification in Indonesian, aligning with the research objective: “Multi-Domain Sentiment Classification on Indonesian Public Reviews using a Combination of Bi-LSTM and Domain-Aware Embedding and Attention.”

Keywords : Multi-Domain Sentiment Classification, Bi-LSTM, Attention, Domain-Aware Embedding