

Hibrida Model BERT dan Deep Learning untuk Analisis Sentimen Bahasa Indonesia - Studi Kasus Sentimen Pengguna Media Sosial terkait Pilpres 2024 = The Hybrid of BERT and Deep Learning Models for Indonesian Sentiment Analysis - A Case Study of Social Media User Sentiments Regarding the 2024 Indonesia Presidential Election

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Abstrak

Ilmu Data adalah irisan dari matematika dan statistika, komputer, serta keahlian domain. Dalam beberapa tahun terakhir inovasi pada bidang ilmu data berkembang sangat pesat, seperti Artificial Intelligence (AI) yang telah banyak membantu kehidupan manusia. Deep Learning (DL) sebagai bagian dari AI merupakan pengembangan dari salah satu model machine learning yaitu neural network. Dengan banyaknya jumlah lapisan neural network, model deep learning mampu melakukan proses ekstraksi fitur dan klasifikasi dalam satu arsitektur. Model ini telah terbukti mengungguli teknik state-of-the-art machine learning di beberapa bidang seperti pengenalan pola, suara, citra, dan klasifikasi teks. Model deep learning telah melampaui pendekatan berbasis AI dalam berbagai tugas klasifikasi teks, termasuk analisis sentimen. Data teks dapat berasal dari berbagai sumber, seperti sumber dari media sosial. Analisis sentimen atau opinion mining merupakan salah satu studi komputasi yang menganalisis opini dan emosi yang diekspresikan pada teks. Pada penelitian ini analisis performa machine learning dilakukan pada metode deep learning berbasis representasi data BERT dengan metode CNN dan LSTM serta metode hybrid deep learning CNN-LSTM dan LSTM-CNN. Implementasi model menggunakan data komentar youtube pada video politik dengan topik terkait Pilpres 2024, kemudian evaluasi performa dilakukan menggunakan confusion metric berupa akurasi, presisi, dan recall.

.....Data Science is the intersection of mathematics and statistics, computing, and a domain of expertise. In recent years innovation in the field of data science has developed very rapidly, such as Artificial Intelligence (AI) which helped a lot in human life. Deep Learning (DL) as part of AI is the development of one of the machine learning models, namely neural network. With the large number of neural network layers, deep learning models are capable of performing feature extraction and classification processes in a single architecture. This model has proven to outperform state-of-the-art machine learning techniques in areas such as pattern recognition, speech, imagery, and text classification. Deep learning models have gone beyond AI-based approaches in a variety of text classification task, including sentiment analysis. Text data can come from various sources, such as source from social media. Sentiment analysis or opinion mining is a computational study that analyze opinions and emotions expressed in text. In this research, machine learning performance analysis is carried out on a deep learning method based on BERT data representation with the CNN and LSTM and hybrid deep learning CNN-LSTM and LSTM-CNN method. The implementation of the model uses YouTube commentary data on political videos related to the 2024 Indonesia presidential election, then performance analysis is carried out using confusion metrics in the form of accuracy, precision, and recall.