

Abstract.

Purpose: This research analyzes sentiment on the 2024 Indonesian Presidential Election using X data, employing a hybrid CNN-GRU model optimized with a Genetic Algorithm (GA) to improve accuracy and efficiency. It also explores GloVe feature expansion for enhanced sentiment classification, aiming for deeper insights into public opinion through advanced deep learning and optimization techniques.

Methods: This research employs a deep learning approach that integrates Convolutional Neural Network (CNN) and Gated Recurrent Unit (GRU) models, Term Frequency-Inverse Document Frequency (TF-IDF), Global Vectors (GloVe), and GA. The dataset comprises 62,955 Indonesian tweets focusing on the 2024 General Election using various keywords.

Result: The results indicated that the Genetic Algorithm significantly improved model accuracy. The CNN-GRU + GA model achieved 84.72% accuracy for the Top 10 ranking, a 1.94% increase from the base model. In comparison, the GRU-CNN + GA model achieved 84.69% accuracy for the Top 5 ranking, a 2.76% increase from the base model, demonstrating enhanced performance with GA across configurations.

Novelty: This research uses a hybrid CNN-GRU model to introduce a novel sentiment analysis approach for the 2024 Indonesian Presidential Election. The model enhances accuracy by combining CNN's spatial feature extraction with GRU's temporal context capture and GloVe's word semantics. Genetic Algorithm optimization further refines performance. Comprehensive pre-processing ensures high-quality data, and focusing on election-specific keywords adds relevance. This study advances sentiment analysis through its innovative hybrid model, feature expansion, and optimization techniques.