Abstract

Twitter, now X is a highly influential social media platform in shaping public sentiment, particularly during the 2024 Indonesian Presidential Election. Sentiment analysis research has been implemented in various topics using deep learning and hybrid deep learning methods, which include feature expansion and optimization techniques. This study aims to develop a sentiment analysis system by leveraging a hybrid deep learning Convolutional Neural Network (CNN) and Bidirectional Long Short-Term Memory (BiLSTM) with FastText for feature expansion to resolve vocabulary mismatch due to character limitations in tweets and Particle Swarm Optimization (PSO) to enhance model accuracy. To support the implementation of FastText, 62,955 tweets data, 126,673 IndoNews data, and 189.628 combinations of tweets and IndoNews corpus were created. This research also performed a hyperparameter to identify the optimal settings for the model. The analysis of a 62,599 tweets dataset related to the 2024 Indonesian Presidential Election shows that the CNN-BiLSTM as a hybrid model achieves the highest accuracy at 72.14%, followed by the BiLSTM-CNN model at 71.60%. These results were achieved using TF-IDF N-Gram, FastText for feature expansion, and PSO for optimization.