Abstract— In the digital era, X has become a crucial platform for public expression and information exchange, especially during elections, enabling sentiment analysis to understand public opinion in real-time. However, the main challenge is processing unstructured and complex text, which often results in less accurate analyses. To address this, this study developed a hybrid deep learning model that integrates Recurrent Neural Networks (RNN) and Convolutional Neural Networks (CNN). Additionally, the use of FastText feature expansion allows the model to overcome vocabulary inconsistencies and enhance contextual understanding by identifying and replacing less representative words with semantically similar alternatives. Two datasets were used to build the similarity corpus, with the X dataset containing 62,955 entries and the IndoNews dataset comprising 126,673 entries. The system demonstrates a maximum accuracy rate of 73.00% on the hybrid deep learning RNN-CNN model, with an improvement of 2.50% over the RNN model and 3.00% over the CNN model. These results indicate that the integration of RNN and CNN, along with the FastText feature expansion technique, enhances sentiment analysis capabilities, providing a more efficient and accurate method for classifying public sentiment..

Index Terms—hybrid, RNN, CNN, fasttext, sentiment analysis