

Innovation in digital services, such as the KAI Access application, is driven by rapid advances in transportation technology. User reviews of this application provide important insights for developers and potential users. Analyzing reviews manually is a challenge. In addition, the use of sentiment analysis methods without involving other aspects also causes confusion for potential users due to the limitations of the analysis. To overcome these limitations, a multi-aspect sentiment analysis method using a combination of Convolutional Neural Network (CNN) and Long Short-Term Memory (LSTM) is used in this study to classify user reviews based on aspects and sentiments. This combined model was used in this study because it performs well on complex texts and is considered to have advantages in local feature extraction by understanding the context sequence in the text, which can reduce the possibility of misinterpretation, resulting in more stable and accurate results, and does not rely on manual feature engineering like other models. The dataset used comes from the Google Play Store consisting of 3038 reviews categorized based on several aspects, such as price, service, application performance, features, and ticket booking. All datasets have gone through a preprocessing stage including data cleaning, case folding, tokenizing, normalization, stop words removal, and stemming. The developed model was evaluated using K-fold cross-validation. The dataset was divided into 80% for training and 20% for testing. The results showed that the CNN-LSTM model achieved the highest accuracy in identifying sentiment on the price aspect, with an accuracy of 87.87%. The proposed system has the advantage of analyzing reviews based on certain aspects. This makes it easier for potential users to determine their choice to use this KAI Access application.

Keywords: multi-aspect, sentiment analysis, CNN, LSTM, app reviews