

## ABSTRACT

*In today's digital era, e-commerce has become the primary platform for buying and selling transactions, where product reviews play a crucial role in influencing consumer purchasing decisions. However, the increasing number of fake reviews presents a challenge for consumers in assessing the authenticity and credibility of reviews. Moreover, with the rapid advancement of technology, the patterns and writing styles of fake reviews are constantly evolving, making them increasingly difficult for the general public to identify. This study aims to develop a fake review detection model using a deep learning approach. The model is expected to help identify fake reviews by analyzing their characteristic attributes through a focus on linguistic features using word embedding to analyze distinctive patterns in fake reviews. In this study, three model architectures, namely Convolutional Neural Network (CNN), Long Short-Term Memory (LSTM), and Bidirectional Encoder Representations from Transformers (BERT), were compared for detecting fake reviews. Experiments were conducted by testing various hyperparameters to find the combination that yielded the best performance, measured through accuracy, recall, precision, and F1 score metrics. The research findings show that the Multi-Task Learning method using IndoBERT produced the best results, with an accuracy of 0.93 for the sentiment task and 0.97 for the review type task. The application of Multi-Task Learning using shared layers and task-specific layers proved to deliver the best performance. This proposed model can be utilized to build a fake review detection system that is expected to enhance consumer trust and effectiveness in making purchasing decisions by identifying the credibility of reviews beforehand.*

**Keywords:** E-Commerce, Fake Review, Deep Learning, CNN, BERT, LSTM