ABSTRACT

This study discusses the analysis and application of a model for detecting similarities between Indonesian essays written by high school and vocational school students and essays generated by ChatGPT using the IndoBERT model. The main issue raised is the increasing use of artificial intelligence (AI) in essay writing, which can threaten students' creativity and academic integrity. The study aims to analyze the differences between authentic student essays and ChatGPT essays through a combination of IndoBERT semantic representations and linguistic features, such as lexical diversity, sentence length, and syntactic structure. The methods used include student essay and ChatGPT data collection, data preparation, linguistic feature extraction, IndoBERT model training for semantic similarity, and classification using neural networks. The evaluation results show that the models achieve very high performance with AUC values above 0.98 in all four models. The paragraph-level model without ChatGPT knowledge showed the best results in the internal test with accuracy, precision, recall, and F1-Score all reaching 98%. Meanwhile, the best sentence-level model was achieved by the model with ChatGPT knowledge with 98% accuracy, 76% precision, 87% recall, and 80% F1-Score. Linguistic features also proved to be effective as discriminative variables. The analyzed model showed good generalization ability on data outside the main dataset and was implemented in a Flask-based web application for practical analysis purposes in educational environments. This research is expected to be the basis for developing an accurate and applicable AI text detection system to encourage academic integrity in Indonesia.

***Keywords**: AI detection, ChatGPT, IndoBERT, linguistic features, semantic similarity, student essays*