

ABSTRACT

The decision-making process in criminal courts in Indonesia is based on written law. Court decision documents from the Supreme Court can serve as a legal instrument in the event of a legal vacuum, meaning when there is no written law governing a particular case in court. These Supreme Court decision documents contain many important parts, thus requiring an efficient way to categorize punishments. This issue calls for a model to predict the category of punishments. Previous research has attempted to use Word2Vec and various deep learning algorithms to develop a prediction model. This study combines hierarchical BERT (Bidirectional Encoder Representations from Transformers) and an LSTM (Long Short-Term Memory) model to predict punishment into four categories: low, moderate, heavy, and very heavy. Experiments were conducted by training two main models: LSTM and LSTM with an Attention layer, using a combination of hierarchical BERT and hyperparameter optimization with grid search to improve prediction performance. The research results show that the implementation of the pre-trained hierarchical BERT model and LSTM successfully achieved a prediction accuracy of 58.1810%. Meanwhile, the implementation of the pre-trained hierarchical BERT model on LSTM with an Attention layer increased the prediction accuracy to 60.3655%, representing an improvement of 3.75% over the LSTM model. This study also suggests future development by fine-tuning the pre-trained hierarchical BERT model.

Kata kunci: Supreme Court Decision Documents, Prediction, Punishment Category, Hierarchical BERT, LSTM, Attention.