

Abstract

The increasing popularity of digital communication has rendered sarcasm a prevalent mode of expression on online platforms, frequently employed to convey implicit criticism or comedy. Identifying sarcasm in Indonesian is notably difficult because of its linguistic intricacies, including several regional dialects, code-mixing, and cultural subtleties. This research introduces a hybrid deep learning model that integrates IndoBERT and Gated Recurrent Unit (GRU) to improve the precision of sarcasm detection in the Indonesian language. IndoBERT is used to create detailed context for the text, while GRU helps the model understand the order of words and long-term context, making it better at recognizing subtle sarcastic comments.

The collection comprises 14,000 manually annotated Indonesian texts, representing authentic language usage on social media. The model undergoes extensive preprocessing and data augmentation methods to enhance generalization and resilience. The experimental results show that the IndoBERT-GRU model achieves an F1-score of 76.88%, with a precision of 76.47% and a recall of 77.14%, which is better than traditional machine learning standards. Despite the dataset's relatively modest size, it establishes a significant basis for sarcasm detection in Indonesian and paves the way for additional research. To enhance applicability, crossdomain evaluations across various platforms and situations are advised. This research enhances the reliability of sentiment analysis and content moderation technologies specifically designed for the Indonesian digital landscape, responding to the escalating demand for sophisticated natural language comprehension in varied online settings.

Keywords—Sarcasm Detection, IndoBERT, GRU, Hybrid Model, Social Media, Indonesian Language