

# Investigating the Impact of Word Embeddings on Fake News Detection

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Keywords: BERT, Fake News detection, word embedding, benchmark study In recent years, the issue of fake

news has gained widespread attention due to the potential harm it can cause to individuals and society as a whole. Machine learning techniques have been explored as a way to automatically detect fake news by analyzing the text content. Word embeddings, a powerful representation of words in a vector space, have shown promise in improving the accuracy of fake news detection [2]. However, there is still a need for further investigation into the impact of different word embedding techniques and their combination on the performance of fake news detection models, specifically, in questions like: How do different word embedding techniques impact the accuracy of fake news detection models? Can a combination of multiple word embedding techniques improve the accuracy of fake news detection models?

This study uses a transformer-based neural network as the base model and experiments with different word embedding techniques. The models are trained and tested on publicly available benchmark datasets of fake news articles [1]. The performance of each model has been evaluated based on accuracy, precision, recall, and F1 score. An ensemble model using a combination of multiple embedding techniques has been developed and evaluated.

The study reveals insights into the impact of different word embedding techniques on fake news detection accuracy. The research also provides evidence on the effectiveness of combining multiple embedding techniques for improved detection performance. In conclusion, this presentation contributes to the growing body of research on fake news detection by investigating the impact of different word embedding techniques. The findings of this research can be used to improve the accuracy of fake news detection models and ultimately help mitigate the harm caused by fake news.

- [1] W. Y. W. Name, ““liar, liar pants on fire”: A new benchmark dataset for fake news detection.,” *In Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*, p. 422–426, 2017.
- [2] R. K. Klaiyar, A. Goswami, and P. Narang, “Fakebert: Fake news detection in social media with a bert-based deep learning approach,” *Multimedia Tools and Applications*, vol. 80, pp. 11765–11788, 2021.