

Enhancing Biomedical Literature Summarization Using BioBERT: A Comparative Study with Domain-Specific Large Language Models

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Abstract

In the current era of information overload, summarizing biomedical literature has become crucial. The rapid increase in research publications challenges researchers, clinicians, and policymakers to stay updated on the latest findings. This study evaluates the performance of BioBERT, a large language model (LLM), in summarizing biomedical papers from PubMed. BioBERT's performance was measured using BERTScore, yielding impressive results: an F1 score of 92%, with precision and recall of 88% and 87%, respectively. These metrics underscore BioBERT's proficiency in generating coherent and accurate summaries of complex biomedical texts. A comparative analysis with other models, including ClinicalBioBERT, SciBERT, and BERT, showed that BioBERT outperformed its counterparts, particularly in understanding domain-specific language and capturing critical information efficiently. BioBERT's superior performance positions it as a powerful tool for condensing vast biomedical literature into concise summaries. The findings contribute to ongoing research on the applications of LLMs in healthcare and bioinformatics. By demonstrating BioBERT's effectiveness in summarization tasks, this study highlights the potential of LLMs to streamline information processing, enabling quicker and more accurate dissemination of knowledge. These results emphasize the transformative role of models like BioBERT in the biomedical domain, facilitating better use of research findings and promoting more informed decisions in healthcare. Finally, this study encourages further exploration of LLMs' capabilities in specialized tasks, such as information retrieval and knowledge extraction.

Keywords: *Large language models, biomedical text, summarization*