

Healthcare Informatics Research (HIR) Call for Papers: Special Focus Issue on Large Language Model (LLM) in Medicine

Guest Editors

Jinwook Choi (Seoul National University, South Korea)

Namkug Kim (University of Ulsan, South Korea)

Edward Choi (KAIST, South Korea)

Dukyong Yoon (Yonsei University, South Korea)

Description of the Special Issue

The emergence of large language models (LLMs) has brought significant changes to the medical field. These models provide valuable support, from simple data analysis to writing research papers and assisting in clinical decision-making. However, AI-driven data analysis and decision support systems sometimes reach incorrect conclusions. This phenomenon, known as hallucination, can be particularly detrimental in healthcare, where even a small error can lead to a loss of confidence in the entire system's reliability. Although many studies are underway to address these issues, more time is needed to resolve them fully.

We aim to explore the current research being conducted in response to the rise of LLMs. By reviewing preliminary findings, we hope to forecast the potential of these models in healthcare. Additionally, we seek to identify the weaknesses of LLMs, explore methods to overcome these challenges, and determine what further preparations are needed in the medical field to effectively integrate these technologies. Through this special issue, we aim to share with readers the current impact of LLMs and the ongoing efforts to implement them effectively in healthcare settings.

The topics of interest

Possible topics include, but are not limited to:

1. LLMs in Clinical Decision Support Systems: The role and impact of large language models in clinical decision support.
2. Natural Language Processing (NLP) in Electronic Health Records (EHRs): Application of LLMs in analyzing and interpreting EHR data.
3. Patient-Generated Data Interpretation: Utilization of LLMs in interpreting patient-generated data (e.g., wearables, social media).
4. Automated Medical Report Generation: Use of LLMs for automated generation of clinical notes, surgical reports, and other medical documents.
5. Clinical Text Summarization and Simplification: Summarizing complex medical texts and providing patient-friendly explanations using LLMs.
6. AI-Powered Drug Discovery and Repurposing: Application of LLMs in drug discovery and the repurposing of existing medications.
7. Chatbots and Virtual Health Assistants: AI-driven chatbots and virtual assistants for patient consultation and education.
8. Deploying LLMs in healthcare organizations: Hardware/software requirements, barriers, and things to consider when deploying LLMs in real-world hospitals
9. Error Detection using LLMs: Leveraging LLMs to detect inconsistencies and errors in medical data automatically.
10. Ethical Implications of AI in Healthcare: Ethical considerations and regulatory frameworks for the use of AI in medicine.
11. LLMs for Personalized Medicine: The role of LLMs in personalized and precision medicine.
12. Predictive Modeling for Disease Diagnosis: Application of LLMs in predictive modeling for disease diagnosis.
13. LLM for Medical Coding and Billing: Use of LLMs in medical coding and billing processes.
14. Real-time Clinical Translation and Language Support: Leveraging LLMs for multilingual support and real-time clinical translation.
15. AI in Telemedicine and Remote Patient Monitoring: Application of LLMs in telemedicine and remote patient monitoring.
16. Safety and Reliability of LLMs in Medical Contexts: Evaluating the safety and reliability of LLMs in healthcare settings.

17. De-identification of Patient Data Using NLP: Application of LLMs for de-identification of patient data.
18. Adverse Event Detection and Pharmacovigilance: Use of LLMs in adverse event detection and pharmacovigilance.
19. Data Transformation using LLMs: Utilizing LLMs to enhance accuracy and streamline the transformation of medical data.
20. Training and Fine-tuning of LLMs on Medical Data: Methods for training and fine-tuning LLMs on medical datasets.

Authors should make sure to place their work in the context of biomedical research or healthcare, and to carefully review the relevant literature. Research articles, case studies, and brief communications should describe clear evaluation strategies and quantitative or qualitative results and discuss how results could be generalized to other settings. Reviews should be systematic. Perspectives should provide consensus from a group of experts who are highly experienced in the topic and demonstrate a command of the existing literature. Open-source software code and data should be submitted, as well as data when appropriate.

Important Dates

January 31, 2025: Manuscript submission deadline

February 28, 2025 (expected): Initial decisions sent to authors

March 31, 2025 (expected): Final decisions sent to authors

* All submitted papers will undergo the review process immediately upon submission, ensuring that the overall review time is handled efficiently.