



해외석학 초청세미나

Medical Information Seeking and Evidence Synthesis in the Era of Large Language Models



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Abstract :

Large language models (LLMs) hold considerable potential to transform how medical information is sought and synthesized. Tasks that have traditionally required substantial human effort can increasingly be supported by LLM-based systems. However, critical limitations persist before these systems can be reliably integrated into clinical practice and biomedical research workflows. In this talk, I will discuss these opportunities and challenges through two lines of our recent work. First, I will present a large-scale expert evaluation of medical retrieval-augmented generation (RAG) systems, examining the relevance and appropriate use of retrieved evidence and its downstream effects on response factuality, completeness, and accuracy. Across 800 model responses evaluated with more than 80,000 expert annotations, we found substantial limitations in both evidence retrieval and selection, and showed that conventional RAG often degraded response quality. I will then discuss methods for improving evidence retrieval and selection, and show how these refinements can translate into meaningful gains on complex clinical tasks, including JAMA Clinical Challenges and differential diagnosis using patient records from Yale New Haven Health System. Second, I will discuss our work using LLMs to automate key components of systematic review and evidence synthesis. This work builds on our systematic review of LLM research in ophthalmology, in which a team of more than 20 researchers manually screened approximately 3,800 papers and performed detailed study classification and information extraction. I will highlight both the potential of LLMs to reduce this burden and the challenges that remain in achieving accurate, consistent, and appropriate human oversight as these workflows become increasingly automated. Finally, I will discuss paths forward for more reliable and scalable medical information seeking and evidence synthesis with LLMs.

Biography :

Dr. Hyunjae Kim is currently a Postdoctoral Associate in the Department of Biomedical Informatics & Data Science at Yale University School of Medicine. He was selected as a 2026 awardee of the Yale Biomedical Imaging Institute (YBII) Postdoctoral Funding Program. Prior to this, he earned his Ph.D. in Computer Science from Korea University in 2023, where he also served as a Postdoctoral Researcher from 2023 to 2024.



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