

Review of the 2025 Fall Conference of the Korean Society of Medical Informatics: Generative AI in Healthcare Systems—From Insight to Impact

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The rapid advancement of generative artificial intelligence (AI) is reshaping healthcare systems worldwide, signaling a shift from exploratory innovation toward tangible, system-level implementation. Within this evolving landscape, the 2025 Fall Conference of the Korean Society of Medical Informatics (KOSMI), held from November 22 to 24 in Incheon, provided a timely and substantive forum for examining how generative AI can be translated into sustainable impact across healthcare systems. Under the theme “Generative AI in Healthcare Systems: From Insight to Impact,” the conference convened 1,131 participants from clinical, academic, industrial, and policy sectors, underscoring the increasingly interdisciplinary character of medical informatics.

The conference opened with remarks by Woo-Kyung Kim, Chair of the Organizing Committee and President of Gil Medical Center, followed by a welcome address from Byung Chul Chang, President of KOSMI. Both speakers emphasized the responsibility of the medical informatics community to guide the integration of generative AI beyond tech-

nological novelty and toward system-level transformation. In congratulatory remarks, Minseob Yeom, President of the Korea Health Information Service, highlighted the central importance of national health data infrastructure, standardization, and governance in enabling trustworthy and scalable AI adoption.

A central highlight of the opening program was the Beom-San Special Lecture delivered by Sang-Hoon Jeon, Professor at Seoul National University Bundang Hospital. His lecture emphasized that clinical insight, domain expertise, and informatics infrastructure must co-evolve for generative AI to function as a reliable component of real-world healthcare systems. Complementing this perspective, the keynote lecture by Ming-Chin Lin, Professor at Taipei Medical University, underscored the importance of human-centered AI and cross-disciplinary collaboration, emphasizing that the primary challenge of medical AI lies not in technical feasibility but in responsible integration that preserves human oversight, accountability, and trust.

The scientific program was comprehensive and carefully structured, comprising four tutorials, 23 symposia, 10 oral presentation sessions with 48 presentations, 87 poster and e-poster presentations, and three industry-supported symposia. Across these sessions, a gradual shift in emphasis was evident. Rather than focusing exclusively on isolated algo-

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rhythms or proof-of-concept demonstrations, the program increasingly addressed how generative AI can be embedded within healthcare systems, organizational workflows, and clinical practice.

Several symposia were particularly notable in illustrating this evolving focus. Sessions addressing AI-based strategies for leveraging the National Integrated Bio Big Data Project emphasized that the value of large-scale biomedical data depends on robust governance, interoperability, and cross-institutional collaboration. These discussions highlighted data stewardship and public trust as essential infrastructural conditions for sustainable AI-driven research.

Similarly, symposia on data- and AI-driven digital health examined pathways for scaling digital health initiatives beyond pilot-stage implementation. Presentations emphasized the alignment of clinical workflows, organizational readiness, reimbursement structures, and regulatory frameworks, positioning generative AI as an enabling component within broader health system transformation rather than as an isolated technological solution.

Another prominent theme emerged from sessions focused on transforming clinical workflows with large language models (LLMs). These discussions reframed LLMs not merely as tools for automation, but as collaborative agents supporting documentation, communication, and decision-making within clinical environments. Consistent emphasis was placed on human-in-the-loop oversight to preserve professional judgment and clinical accountability, underscoring the importance of integrating AI into existing clinical roles and responsibilities.

Ethical, legal, and social considerations were woven throughout the scientific program, rather than being addressed as isolated or auxiliary topics. Instead of being treated as peripheral concerns, trustworthiness, transparency, and governance were consistently framed as foundational design principles for generative AI. This sustained integration of ethical reflection into technical discourse reflected a maturation of the field, in which responsible AI is increasingly understood as inseparable from effective and scalable implementation.

Oral and poster presentation sessions further demonstrated the breadth and vitality of contemporary medical informatics research. Contributions spanned a wide range of topics, including predictive modeling, natural language processing, federated learning, and explainable AI. Strong participation by graduate students and early-career researchers underscored both the robustness of the emerging research community and the Society's sustained commitment to academic continuity and inclusiveness.

Beyond formal academic sessions, the conference actively fostered a strong sense of scholarly community. Initiatives such as the KOSMI Running Crew, together with the active engagement of Daily KOSMI student reporters, reflected intentional efforts to broaden participation across generations and academic stages. These initiatives complemented the high level of engagement observed in oral and poster sessions, reinforcing the conference's broader emphasis on cultivating a sustainable, inclusive, and participatory academic culture.

Taken together, the 2025 KOSMI Fall Conference reflects an ongoing evolution in the Society's academic discourse. Whereas earlier meetings primarily focused on exploring the emerging potential of generative AI, this conference placed greater emphasis on system-level integration, governance, and human-AI collaboration as essential foundations for real-world impact. By progressively extending the focus from technological insight to organizational and societal implementation, the conference suggests that medical informatics is entering a new phase in which generative AI is expected to operate responsibly within complex healthcare systems. In this context, KOSMI continues to position itself as a key platform for guiding this transition and for fostering thoughtful, sustainable innovation in the era of generative AI.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Acknowledgments

This conference summary is based on the Daily KOSMI coverage made by the valuable contributions of KOSMI's Academic Committee members and the dedicated efforts of the 3rd KOSMI Student Reporters. We extend our sincere appreciation to the following student reporters, whose on-site coverage and insights greatly enriched this editorial: Jae Yoon Kim, Department of Medical Informatics, College of Medicine, The Catholic University of Korea; Gyu Min Choi, College of Nursing, Gachon University; Su Jin Ryu, Department of Nursing, College of Biomedical and Health Science, Konkuk University; Ji won Han, Department of Health Administration, Kongju National University; Hyeong Jin Ju, College of Veterinary Medicine, Seoul National University; Min Hyeok Ju, College of Nursing, Inha University; Minseong Kim, Department of Nursing, Gangneung-Wonju

National University; Su Yeon Lee, Department of Health Administration, Kongju National University; Jae Yeong Shin, Department of Healthcare Administration, College of Bio and Medical Sciences, Catholic University of Daegu; Miran Yu, College of Nursing, Chungnam National University. Generative artificial intelligence was used to assist with English translation and editorial refinement of the manuscript.

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