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기타소속:

강연제목: Patient-Radiologist Visual Question and Answering (VQA) System for lung cancer diagnosis using Foundational Visual Language Model

Abstract:

Patients managing a complex illness such as cancer face a complex information challenge where they not only must learn about their illness but also how to manage it. Close interaction with healthcare experts (radiologists, oncologists) can improve patient learning and thereby, their disease outcome. However, this approach is resource intensive and takes expert time away from other critical tasks. Given the recent advancements in Generative AI models aimed at improving the healthcare system, our work investigates whether and how generative visual question answering systems can responsibly support patient information needs in the context of radiology imaging data. We conducted a formative need-finding study in which participants discussed chest computed tomography (CT) scans and associated radiology reports of a fictitious close relative with a cardiothoracic radiologist. Using thematic analysis of the conversation between participants and medical experts, we identified commonly occurring themes across interactions, including clarifying medical terminology, locating the problems mentioned in the report in the scanned image, understanding disease prognosis, discussing the next diagnostic steps, and comparing treatment options. Based on these themes, we evaluated two state-of-the-art generative visual language models against the radiologist's responses. Our results reveal variability in the quality of responses generated by the models across various themes. We highlight the importance of patient-facing generative AI systems to accommodate a diverse range of conversational themes, catering to the real-world informational needs of patients.

Brief Biosketch

Dr. Sookyung Kim is an Assistant Professor in the AI Department at Ewha Womans University in South Korea.. With a prior role as Senior Research Scientist at SRI's ISL, her expertise includes deep reinforcement learning and AI in physical sciences, focusing on climate AI and AI-driven discoveries in materials and pharmacology. Dr. Kim led projects at Lawrence Livermore National Laboratory on machine learning applications for environmental and pharmaceutical challenges. She has offered her knowledge through tutorials at Seoul National University and KISTI, and contributed as Programming Chair for DMESS and Climate Informatics committees. Dr. Kim holds a Ph.D. in Computational Material Science and M.S. degrees in Computer Science and Electrical Engineering from Georgia Tech and Columbia University, respectively. Her interests extend to global travel.