



Generation of Patient-friendly Radiology Video Reports by an Integrated AI System

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Introduction

Patient-centered radiology requires accessible communication of medical findings. While current efforts using large language models focus on simplifying reading levels, they often lack integration with imaging data that could enhance patient comprehension. We developed and evaluated an integrated AI system that generates patient-friendly video reports combining simplified explanations with highlights of findings on radiology images.

Hypothesis

We hypothesized that radiologists would rate the generated video reports as accurate and suitable for integration into their clinical workflow.

Methods

The system integrated GPT-4o for translating medical terminology into plain language, a grounding model for automated lesion highlighting and 3D anatomy rendering, and an avatar generation system for a virtual presenter interface. We evaluated the system using ten video reports generated for diverse cases, each associated with a detailed survey comprising ten questions using a 5-point Likert scale. Five radiologists conducted the surveys by reviewing the video reports together with the original reports.

Results

Radiologists strongly endorsed the system's core functionalities and the video reports' utility (Figure 1). The integration of displaying images was highly rated (100% positive: 68% strongly agree, 32% agree), along with the identification of the important CT findings (100% positive) and the comparison to normal CT scans (100% positive). The explanation's clarity (98% positive) and the avatar's natural conversation style (98% positive) garnered universal positive feedback, with most feedback confirming the reports achieved an 8th-grade reading level comprehension (98% positive) and that the video sufficiently reviewed the findings (96% positive). Overall, radiologist users showed comfort in using these videos to help patients understand their reports (80% positive). Concerns remained about sharing videos before patient visits (60% positive, 20% neutral, and 20% negative). The 3D rendering feature showed mixed utility, with 50% finding it helpful, 44% remaining neutral, and 6% disagreeing with the usefulness.

Conclusion

This study demonstrates the feasibility of an AI-driven pipeline for generating patient-friendly video reports, representing a significant step toward enhanced patient-centered radiology communication.

Figure(s)

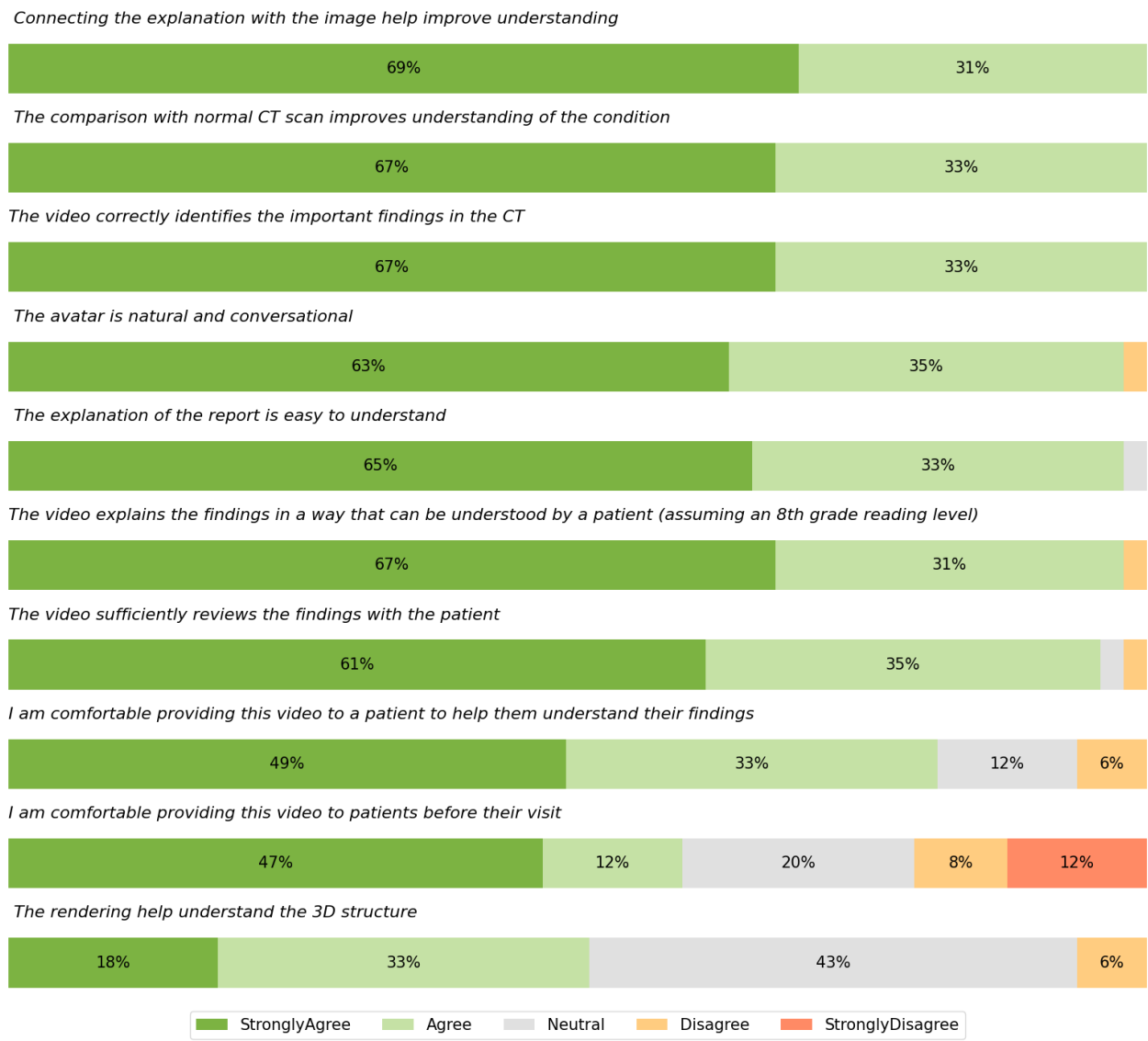


Figure 1. User feedback from four radiologists based on five video reports generated by the system. Neutral = “neither agree or disagree” .

Keywords

Applications; Artificial Intelligence/Machine Learning; Patient/Family Experience