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강연제목: 영상판독문 교정 도구로써의 GPT-4 활용 가능성 탐구

Feasibility of GPT-4 as a Proofreading Tool for Head CT Reports

Abstract:

Purpose: To test the feasibility of GPT-4 use by determining its error detection, reasoning, and revision performance on head CT reports with varying error types and to validate its clinical utility by comparison with human readers.

Materials and Methods: Materials and Methods: We retrospectively extracted 10 300 head CT reports from the Medical Information Mart for Intensive Care III (MIMIC-III) public dataset. In experiment 1, among 300 unaltered and 300 error-applied reports, 200 were used to optimize GPT-4, and the remaining 400 were evaluated for error-type detection, reasoning, revision, and undetected errors. Performance was also compared with human readers. In experiment 2, GPT-4's detection was validated on 10 000 physician-confirmed error-free reports, and false-positive results were analyzed.

Results: GPT-4 demonstrated commendable performance in error detection reasoning, and revision. Compared with GPT-4, human readers had worse factual error detection sensitivity and took longer to review. In 10 000 reports, GPT-4 detected 96 errors, with a low positive predictive value of 0.05, yet 14% of the false-positive responses were potentially beneficial.

Conclusion: GPT-4 effectively detects, reasons, and revises errors in radiology reports. While it shows excellent performance in identifying factual errors, its ability to prioritize clinically significant findings is limited. Recognizing its strengths and limitations, GPT-4 could serve as a feasible tool.

Brief Biosketch

세브란스병원에서 인턴 과정을, 강남세브란스병원에서 영상의학과 전공의 과정을 수료한 뒤 현재 연세대학교 의과대학 의생명시스템정보학교실 윤덕용 교수 연구실에서 전일제 박사 과정에 있음. 의료영상 및 의료영상판독문의 인공지능 기반 임상 적용에 대한 연구를 수행함.