Poster Presentation

FROM DATA TO DIAGNOSIS

Practical AI in Hematology

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GitHub Repository: https://github.com/MerimJ/From-Data-to-Diagnosis-Practical-AI-in-Hematology

FROM DATA TO DIAGNOSIS: Practical AI in Hematology

Automated Interpretation of Routine Hematology Lab Results Using GPT Agents

Objectives

- Develop an AI-powered framework to interpret routine hematology lab results.
- Compare outputs of GPT-4 with and without retrieval-augmented generation (RAG).
- Evaluate accuracy using Likert-scale scoring by two laboratory technologists.

Methods

This project analyzed 100 anonymized lab reports using two GPT agents: one standard and one enhanced with a hematology knowledge base (RAG). Laboratory technologists scored the outputs based on clinical accuracy, completeness, and safety. Source code and tools are publicly available via GitHub.

Results

GPT-4 with RAG produced significantly more reliable interpretations than the baseline. Lab technologists awarded higher scores for completeness and safety. The project shows that intelligent automation can accelerate diagnostics, though some hallucinations remain.

Conclusions & Future Work

This pilot study demonstrates the promise of retrieval-augmented LLMs in medical diagnostics. Future steps include dataset expansion, expert fine-tuning, and integration into LIS systems.

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