



An Agentic Hybrid Architecture for Grounded Longitudinal Clinical Reasoning and Explainable EHR Summarization

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Abstract:

Longitudinal Electronic Health Records (EHRs) have clinical signals that are spread out and required to be thought about in several steps for correct understanding. Traditional systems either depend on separate rule-based alerts or directly create narrative summaries, which lack a structured time frame. This paper talks about an agentic hybrid architecture that combines deterministic longitudinal analytics with controlled large language model (LLM) generation. Before making a structured insight representation, the agent first coordinates normalization, trend extraction, recurrence modeling, and medication transition analysis, and then this representation is turned into summaries for clinicians using limited prompts. The framework helps to make things more clear, modular, and easy to understand in a clinical setting by combining autonomous analytical orchestration with grounded language synthesis.

Keywords:

Electronic Health Records, Agentic Systems, Hybrid Intelligence, Longitudinal Reasoning, Explainable Clinical AI.