TaqreeRx: An Open-Source Arabic Cardiology AI Summarizer

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Abstract

Healthcare delivery in Egypt is severely constrained by the near-total absence of unified Electronic Health Records (EHRs). Clinicians must reconstruct patient history from oral recollection and bundles of scattered, unstructured paper documents, contributing to repeated diagnostic testing, medication conflicts, and preventable delays in clinical decision-making.

We present TaqreeRx—from the Arabic word تقرير ("clinical report") combined with Rx, the universal medical symbol for prescriptions—a fully functional, open-source proof-of-concept demonstrating that accurate, structured Arabic cardiology documentation can be generated directly from real-time spoken consultation dialogue using only freely available tools. To our knowledge, this is the first publicly documented, end-to-end Arabic cardiology scribe built exclusively with open-source components running on free, publicly accessible cloud hardware.

The current prototype integrates two open-source models:

1) Whisper Medium Arabic, an automatic speech recognition (ASR) system for high-accuracy Arabic transcription.
2) Qwen 1.5–7B-Chat, a 7-billion-parameter large language model (LLM) loaded in 4-bit quantized form using the BitsAndBytes NormalFloat4 (NF4) configuration, paired with strict medical Arabic prompting to minimize hallucinations.

Tested on a high-fidelity simulated cardiology encounter (10 minutes 38 seconds; 58-year-old male with acute central chest pain radiating to the left arm, with diabetes, hypertension, past smoking, and strong family history of heart disease), TaqreeRx generated a complete, clinically accurate Arabic note in 42.5 seconds end-to-end (23.4 seconds ASR + 19.1 seconds LLM). Every statement in the output was directly traceable to the spoken dialogue, with no fabricated or unverifiable clinical content.

Building on this core capability, TaqreeRx will expand to multimodal input by incorporating Arabic Optical Character Recognition (OCR) for patient-carried documents and automated medication structuring. Development is guided by STEADI principles—Sustainable, Transparent, Ethical, Adaptive, Decentralized, Inclusive—and Actor-Network Theory (ANT) to ensure responsible, clinician-centered innovation.

TaqreeRx provides early, reproducible evidence that multimodal artificial intelligence can enable continuity of care within Egypt's fragmented healthcare landscape—even in the absence of formal EHR infrastructure. Source code available at: https://github.com/ahgomaa/TaqreeRx/

Index Terms

Arabic clinical artificial intelligence, cardiology scribe, multimodal summarization, open-source healthcare, fragmented records, hallucination-resistant documentation