



AI-POWERED

Medical Scribing & Clinical Documentation Automation

Client Profile

A digital healthcare solutions provider delivering transcription services sought to:

1. **Reduce administrative burden on caregivers** through automation.
2. **Enhance clinical documentation** by integrating modern AI capabilities.

AI-Driven Solution Architecture

To solve this, we built and deployed a modern, end-to-end transcription intelligence system that includes:

Streaming Data Ingestion

Built a secure, HIPAA-compliant pipeline to ingest >50 dictations per day into Azure Data Lake from the client's native transcription platform.

Advanced Speech-to-Text Conversion

Integrated ASR (Audio Speech Recognition) models, including **Whisper** and **HIPAA-compliant local models**, for high-accuracy transcription.

LLM-Based Clinical Note Generation

Used **LLaMA 2** and **medAlpaca** to generate rich, structured clinical summaries. Both models were fine-tuned using the client's historical data to improve accuracy and vocabulary relevance.

REST API Deployment for Front-End Integration

Served AI outputs through **FastAPI-based endpoints**, connecting to the client's web apps via **Azure Web Apps**.

Automated CI/CD Pipelines

Enabled seamless updates and zero-downtime model deployment with **containerized pipelines (Docker, Kafka)** for model versioning and orchestration.

Challenge

The existing reliance on manual scribing and legacy platforms was inefficient, slow to scale, and lacked intelligent automation. They needed a robust, secure, and scalable AI-powered solution that could:

- Automate medical scribing via real-time audio processing.
- Seamlessly convert spoken dictation into structured clinical notes.
- Integrate transcription intelligence into their native platform with minimal disruption.

Results & Business Impact

- 25% reduction in caregiver administrative workload
- Achieved <9% Word Error Rate across >500K words transcribed
- Processed 1,000+ daily dictations using scalable infrastructure
- CI/CD setup enabled model updates with <1-day turnaround
- All components built with full HIPAA and PHI compliance in mind

Technology Stack

