SmartScribe

Infosys700: Group 19

Introduction

Current Challenge

Doctors spend a large portion of their time transcribing medical notes into Electronic Health Records, leading to high levels of burnout, affecting **4 out of 10 doctors** [1]. A study has shown that computerised physician order entry is linked to a **29% higher rate of burnout** [2]. While medical scribes can help, they are difficult to train and retain.

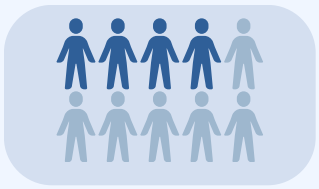

Figure 1: Doctor burnouts

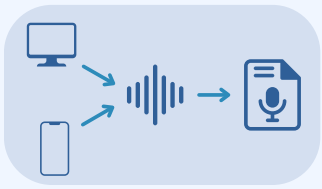

Figure 2: Audio to medical notes

Our Proposal

We propose SmartScribe, a neural speaker diarization (SD) system tailored for patient-doctor conversations, designed to process audio and generate medical notes. Current solutions only generate transcriptions, whereas ours will generate transcriptions combined with speaker labels to ensure a more robust system.

System Diagram

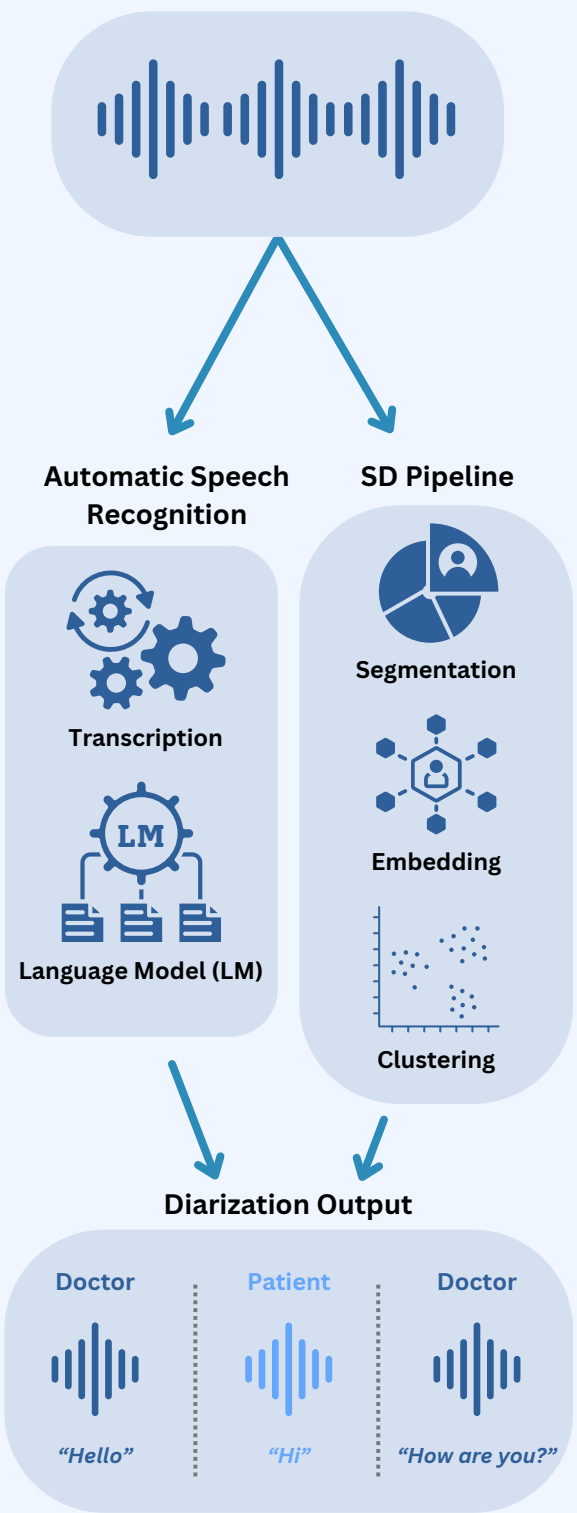

Figure 3: Full End-to-End System Diagram

Market Analysis

High transcription accuracy required for medical industry

Manual Electronic Health Record (EHR) entry is time consuming

Current AI solutions are unable to accurately distinguish between multiple speakers in medical conversations

Gap for reliable & automated medical transcription innovation

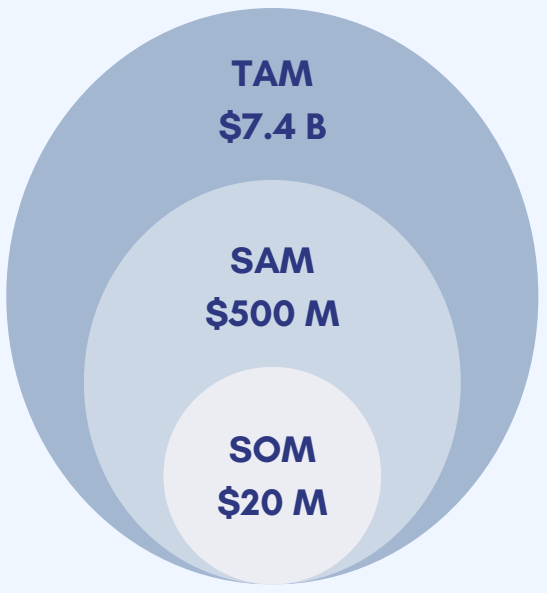

Figure 4: Market Size (USD)

Benefits

Enhanced accuracy
Identifies multiple speakers, reducing documentation errors.

Improved context
Captures conversations clearly, making information easy to find later.

Reduced workload
Automates transcription, freeing up doctors for patient care.

Seamless integration
Fits smoothly with existing EHR systems by generating standardised transcriptions.

Increased confidentiality
Enhances data security by reducing reliance on human scribes.

Scalable and adaptable
Works across departments and various medical fields.

Lessons

Navigating privacy and ethical challenges when acquiring and handling sensitive medical data.

Overcoming the technical complexities of developing ML models.

Recognizing the importance of accuracy in medical software development.

Gaining experience in hosting and deploying ML models effectively.

Proof-of-Concept

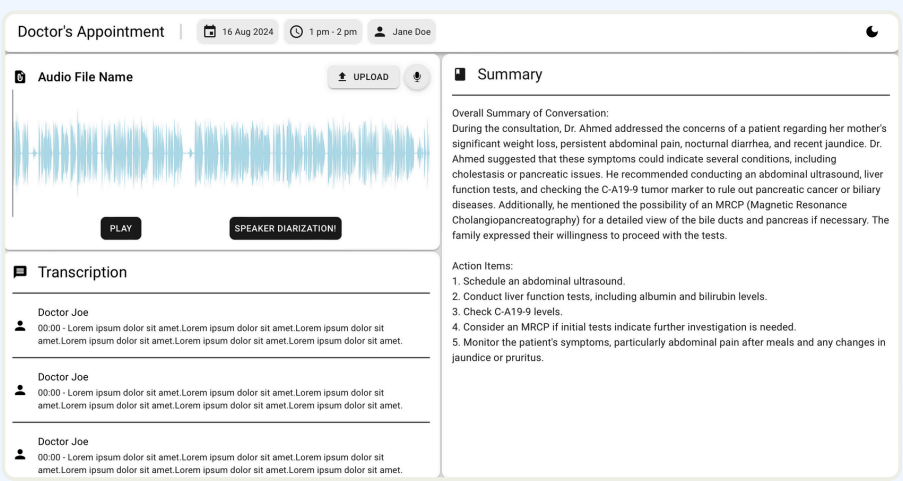

Figure 5: Proof-of-Concept Front-end

Conclusions

- Doctors need help with medical note-taking to reduce burnout and improve patient care.
- Current transcription solutions lack speaker identification, leading to ambiguity and loss of context.
- Our product addresses this gap, positioning it to capture the healthcare market.
- Key benefits include improved accuracy, confidentiality, and integration.
- By reducing doctors' workloads, our solution allows them to focus more on patient care.

[1] T. D. Shanafelt et al., "Changes in Burnout and Satisfaction With Work-Life Integration in Physicians and the General US Working Population Between 2011 and 2020," Mayo Clin. Proc., Mar. 2022
[2] West CP et al., Physician burnout: contributors, consequences and solutions. J Intern Med. 2018