AI System for Dentist PERIO Chart

Dental AI & Speech Recognition

Advanced Text Processing   **Error Reduction Mechanisms**   **Automated Data Structuring**

Overview

The Dentist AI PERIO Chart is an advanced system designed to assist dentists in recording patient periodontal data using speech recognition. This system enables real-time entry of values into the perio chart by interpreting spoken input, improving efficiency and accuracy in dental record-keeping.

Client Profile

NDA

USA

Better Diagnostics specializes in AI-powered solutions for the dental industry, leveraging advanced machine learning and automation to enhance diagnostic accuracy and efficiency. With over 15 years of experience, they are dedicated to revolutionizing clinical workflows through innovative AI applications, making high-quality dental assessments more accessible and reliable for practitioners worldwide.
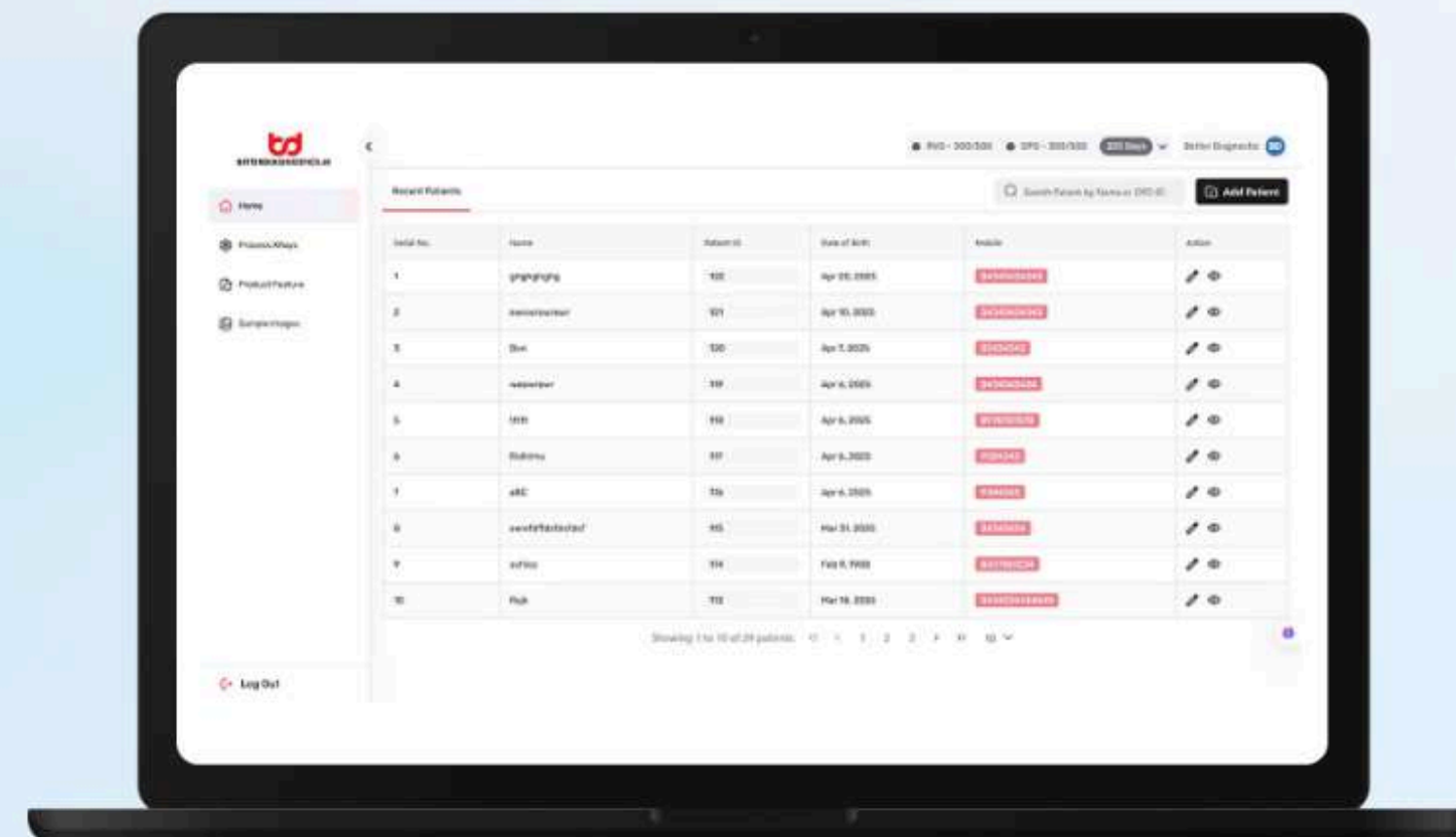
Request Background

Dental professionals were following traditional processes for Perio Chart.

Manual Inefficiences

Dental professionals manually input periodontal measurements into charts while examining patients. This process is time-consuming and prone to human error

Technology Advancement

With advancements in artificial intelligence and speech-to-text technology, automating this task became a viable solution

By integrating AI-powered speech recognition and text-processing models, the Dentist AI PERIO Chart aimed to streamline data entry, reduce manual workload, and enhance accuracy in periodontal assessments

Challenges

The client has faced various challenges in the traditional practices for PERIO chart.

Inefficient Speech-to-Text Processing

Initial implementation with Whisper led to transcription delays.

Incorrect Data Placement

Ensuring transcribed values were accurately mapped to the correct teeth in the perio chart.

Transcript Formatting Issues

Early models caused inconsistencies in structuring transcriptions.

AI Model Optimization

Testing multiple speech-to-text solutions to determine the most effective model.

Seamless Data Integration

Developing a formatting mechanism to ensure accurate data processing.

Goals

Implement a speech-to-text model with high accuracy and real-time transcription capabilities

Develop an automated system that correctly assigns transcribed values to the perio chart

Reduce transcription errors and enhance overall system performance

Identify and implement the most suitable AI model for this use case

Ensure seamless data formatting and integration into the perio chart
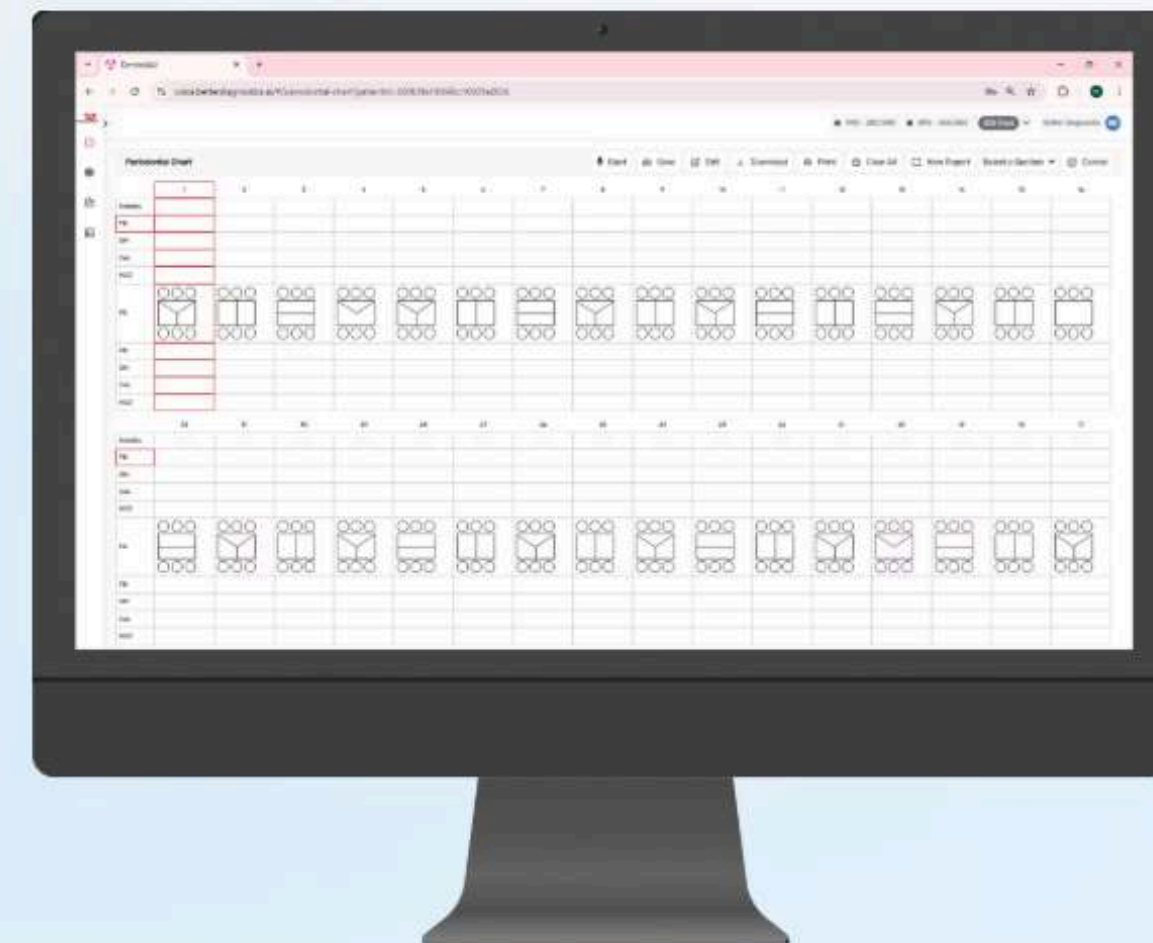
Solution - AI-Powered Periodontal Charting System

Technology Stack

Amazon Nova

Azure

Microsoft® .NET

ANGULAR

Duration & Resources

ⓘ **Time Taken - 1 Year**

ⓘ **Resources - 4 Specialists**

Our team conducted an in-depth analysis of dental workflow processes, identified inefficiencies, and gathered requirements to develop a scalable, integrated perio charting system.

Real-Time Speech-to-Text with Azure Cognitive Services

Integrated Azure's Speech-to-Text API to transcribe dental observations in real time. The system was fine-tuned for medical terminology, ensuring high transcription accuracy and seamless data capture during consultations.

AI-Based Data Structuring with AWS Bedrock and LLaMA

Using Bedrock and LLaMA models, transcribed text was structured into chart-ready formats. The AI recognized key clinical terms, tooth positions, and metrics, and intelligently mapped them to the appropriate fields in the perio chart.

Error Handling and Validation

Implemented confidence thresholds, position checks, and fallback mechanisms to minimize incorrect data placement. Low-confidence entries were flagged for manual review, maintaining data integrity.

Automated Chart Integration

Structured data was automatically formatted and pushed to the perio chart interface via APIs, ensuring a seamless user experience without manual input.

Outcomes

The implementation also ensured seamless integration with accurate, real-time mapping of periodontal measurements and delivered a scalable & AI-driven solution designed for long-term adaptability and efficiency.

35%
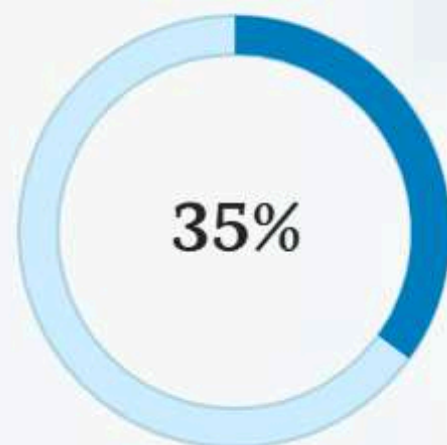
Efficiency Increase

Reduced manual workload by automating data entry of charting

30%

Error Reduction

Improved text accuracy and data placement

100%

Real-time Processing

Faster speech-to-text processing significantly improved workflow speed

Client Feedback

"The AI PERIO Chart has made our periodontal exams so much easier. The speech-to-text works really well and saves us a lot of time. It's accurate, fast, and has helped us keep better records without the extra hassle."

Autviz Solutions