
Breast Care AI Presentation Script

Slide 1: Title Slide

Good afternoon everyone. Today I'm presenting Breast Care AI, a platform designed to support breast cancer detection and provide evidence-based guidance.

Slide 2: About Breast Care AI / Purpose

Breast cancer affects 2.3 million women annually worldwide, with early detection being crucial, survival rates jump from 30% to over 90% when caught early.

As John Diamond said, "Cancer is a word, not a sentence." This captures our project's essence: transforming breast cancer from a feared diagnosis into a manageable condition. Breast Care AI empowers individuals by combining advanced mammography analysis with personalized guidance, making the breast health journey more navigable.

Slide 3: About Our Services

Breast Care AI integrates three essential services:

First, early diagnosis through advanced mammogram segmentation uses AI to precisely identify abnormalities that might be missed in routine examinations.

Second, we provide clear explanations of breast health and cancer risks from verified medical sources, helping users better understand their situations.

Third, our system offers adaptive emotional support, adjusting its tone based on user input to address their needs throughout the breast health journey.

Slide 4: Privacy and Trust

Our system prioritizes privacy and trust, no personal data is stored or shared. Using local models and a RAG system grounded in verified medical literature ensures privacy, trustworthy and accurate responses.

Slide 5: Tools - Mammogram Segmentation

The mammogram segmentation component, is still under development.

We're using U-Net architecture as our foundation, which is particularly effective for medical image segmentation because it enables precise delineation of structures.

To optimize performance, we're employing metaheuristic algorithms for hyperparameter tuning, allowing us to fine-tune the model for maximum accuracy.

As an alternative approach, we're also exploring the meta model SAM, which offers adaptability when segmenting mammograms with minimal user input. This dual approach will help us identify the most effective method for accurate breast tissue analysis.

Slide 6: Tools - RAG System Components

The Retrieval-Augmented Generation system, is nearly complete. We've implemented a robust pipeline using three core components:

FAISS, an efficient vector database, enables fast and accurate similarity searches among embedded document chunks from medical literature

For language processing, we're using Ollama to run LLaMA 3:8B locally, ensuring fast, private responses without cloud dependencies.

LangChain serves as the framework connecting these components, allowing us to build a pipeline that links the language model with external tools.

Slide 7: Tools - User Interface and Voice Components

To create an accessible experience, we've implemented voice capabilities with OpenAI's speech recognition model Whisper.

For voice output, we plan to integrate Piper TTS, a lightweight, text-to-speech system.

All of this is wrapped in an intuitive interface built with Streamlit, making the system easy to navigate for users regardless of their technical expertise.

Slides 8-10: Preview of the Interface

Here's a preview of our prototype interface where users can upload documents, ask health questions, and receive transparent, evidence-based responses with clear source citations. If anyone is interested I'm happy to demonstrate the system in more detail after the presentation.

Slide 11: Thank You

Thank you for your attention today. I'm now open to any questions you might have about the project.