



Breaking the Silence

Tinnitus & Health Awareness

Women Who Code Hackathon for Social Good 2023



Introduction to Tinnitus and Women

Tinnitus: The Invisible but Loud Tribulation



Tinnitus is a relentless internal sound, often perceived as ringing or buzzing in the ears, disrupting the peace of silence. It affects millions, impacting sleep, focus, and overall well-being, but there is no cure.

The Silent Struggle of Women with Tinnitus

Many women who experience tinnitus find themselves facing specific challenges and hardships, often due to **misperceptions** and **societal expectations**.

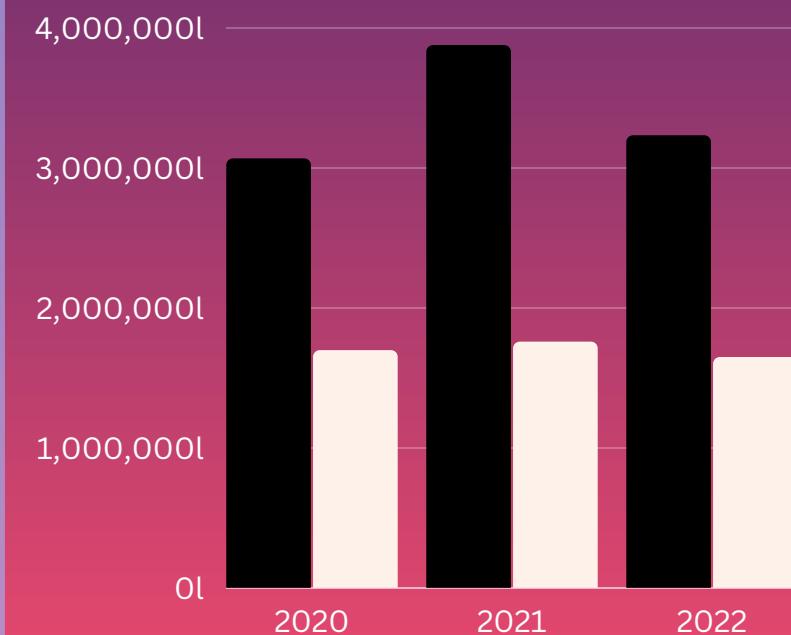
- Dismissal of their tinnitus as "just stress"
- **Delayed diagnosis and management.**
- Minimize the severity of the condition and result in a **lack of support**
- Compounding the emotional and psychological burden for these women.



Health Savvy

The Truth About Tinnitus

Searches made on
**TINNITUS &
RINGING IN EARS**
on Google USA



Women are less likely to receive a formal diagnosis of tinnitus



10%

Of people have tinnitus consistently or always

More than 1 in 6 in the UK

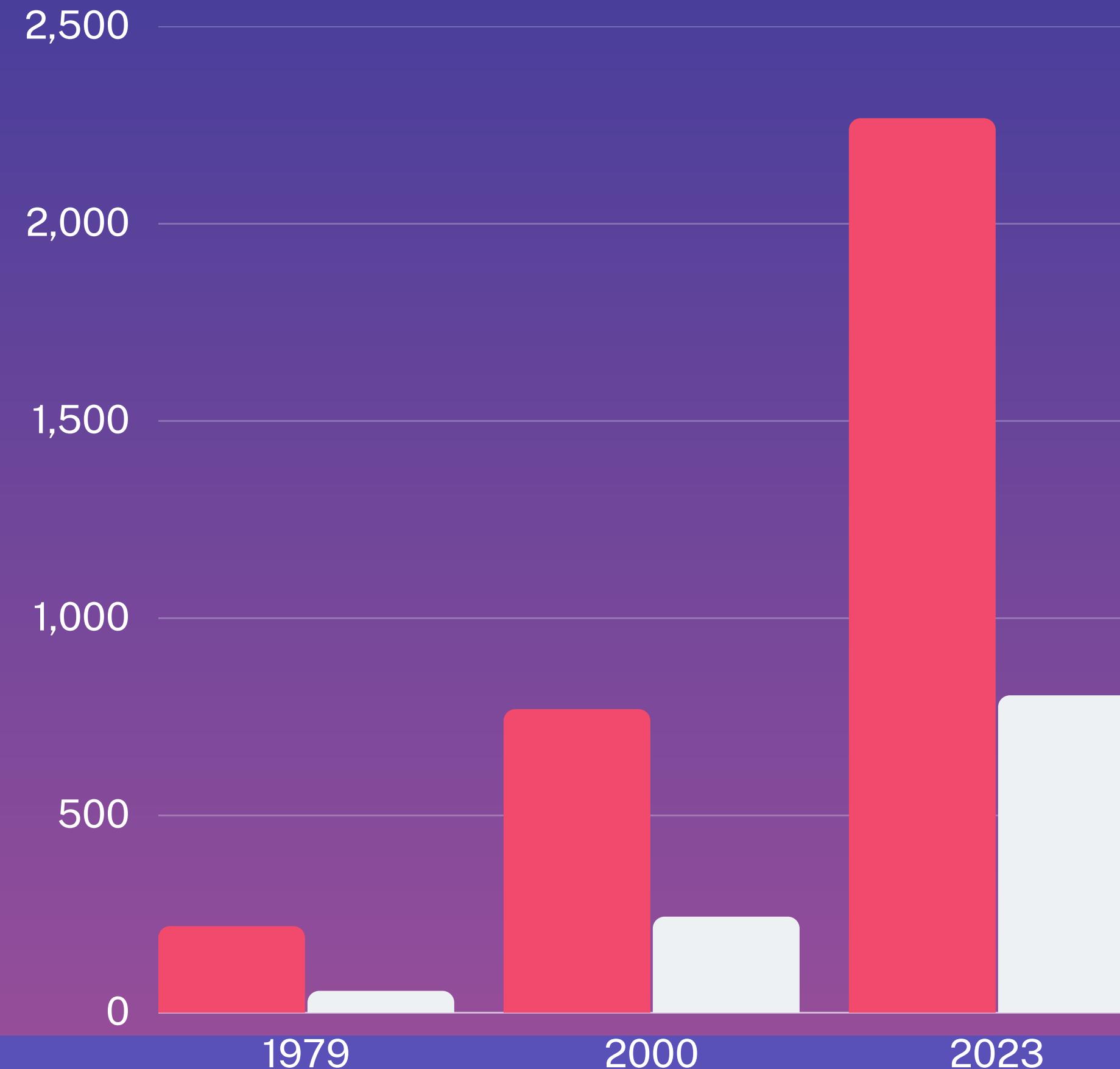


Experience tinnitus like symptoms often



Amount of Research Published

■ Migraines ■ Tinnitus



This data paints a clear picture: when it comes to tinnitus, we're lagging behind by nearly 23 years in terms of research attention compared to other conditions.

Our Team



Nao Takahashi

Front End Developer

Crafting Intuitive User Interfaces with Code.



Devipriya Raju



Shaily Goyal

ML Powered Tools

Master's student in Computer Science from University of Colorado Boulder



Nimra Sharnez

ML Powered Tools

Passionate Data Scientist with a love for creating tools for wellbeing



Eshika Pawar

Data Cleaning and Insights

Data Science and Machine Learning enthusiast



Jessi Paarfus

Full-Stack Developer

Clinician turned Developer leveraging technology to drive positive change.

Challenge Statement

Breaking the Silence: Tinnitus Health and Awareness

We are working to solve the underrepresented medical condition- Tinnitus. Our project aims to do this by bridging the gap between health knowledge and users by leveraging Machine Learning and community support forums.

This benefits society by creating an open and accessible space for sufferers who are often silenced. With the power of a community forum and machine learning, we created a personalized experience, bridging the divide between isolation and much-needed support of our silent sufferers.



Our Solution

Spread the Word: Knowledge and Support for Everyone!

We strive to create an inclusive and supportive community forum that provides a safe space for young women to openly discuss their experiences with tinnitus. Through the power of artificial intelligence, we aim to bridge the gap in tinnitus research. Our AI-driven recommendations connect patients with existing research, fostering a culture of advocacy for further investigations. By educating people about this condition, we inspire them to stay informed and extend their support to those affected, ultimately leading to better management and resolution of tinnitus.



Presentation Overview



Tech Stack

The Impact

Challenges and Learnings

Future Plans

Tech Stack

Neon Tech

- Cloud Database (PostgreSQL)

Passage

- Password and User Authentication

Django

- Backend Web Framework

React

- Frontend UI Library

Tailwind CSS

- Responsive UI Design

Machine Learning

- LDA topic Modeling, Classifiers, Data Generating, Web Scraping

Natural Language Processing

- SpaCy, SciSpaCy NER

Large Language Models

- Hugging Face, BERT

Data Science

- Dashboards, Data Visualizations, Pandas

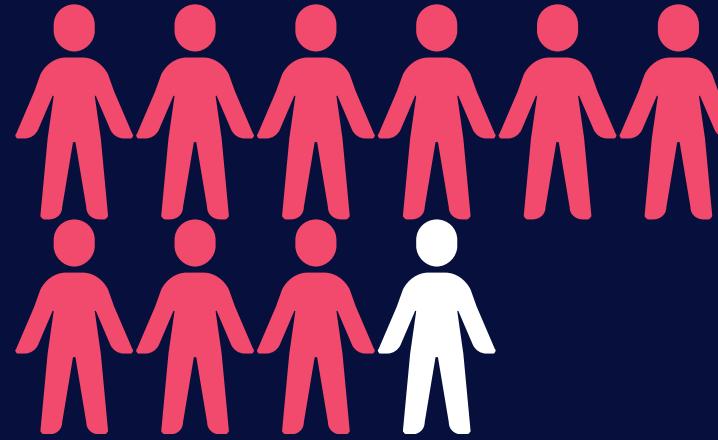




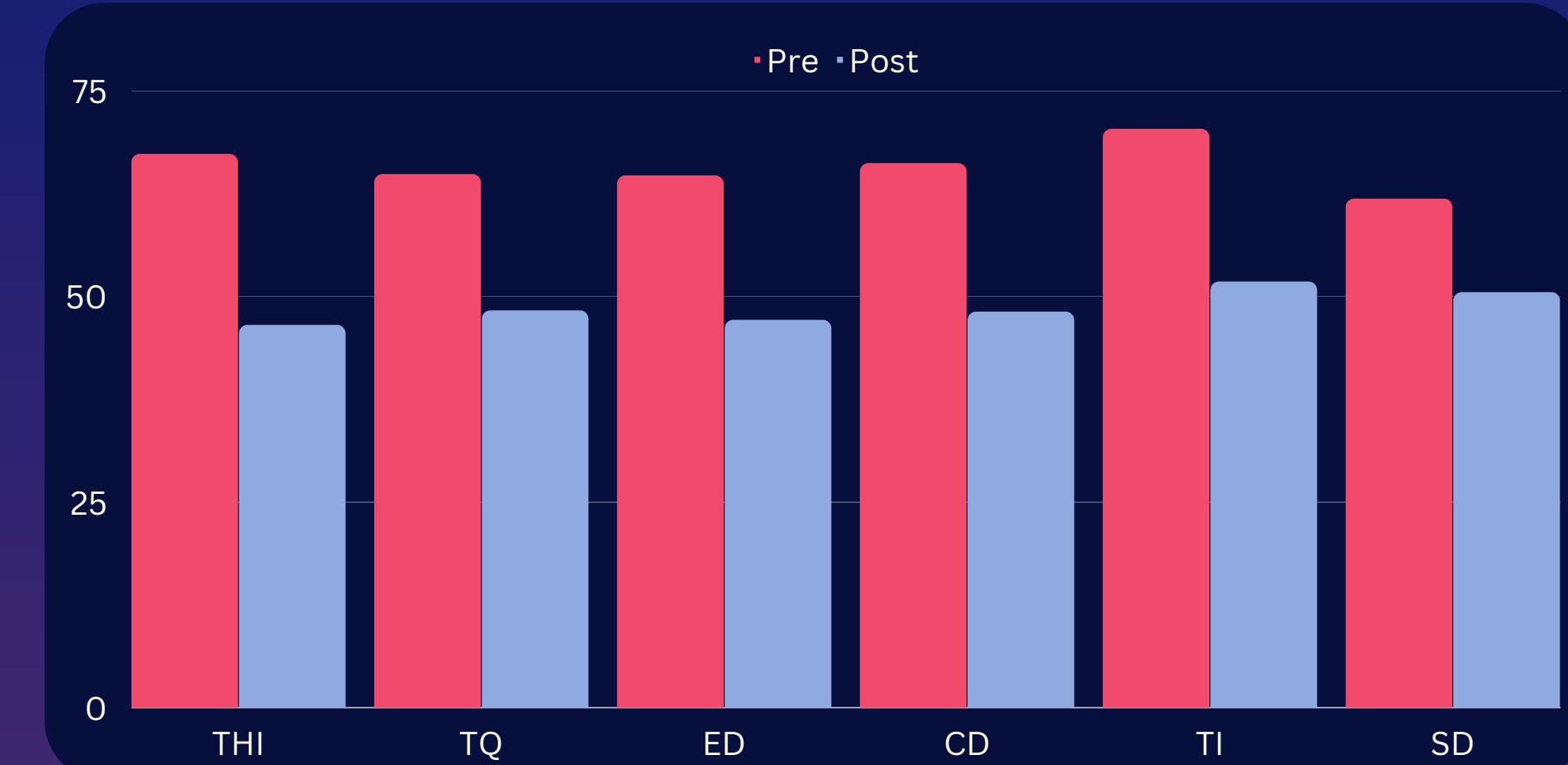
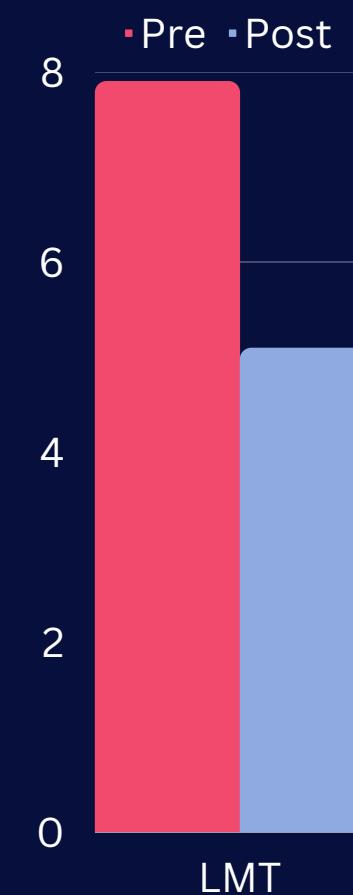
Impact

Our research shows that our interventions reduce tinnitus severity and emotional distress.
This is a testament to our app which provides support and treatment plans.

More than 9 in 10



Saw improvements in their THI score after intervention



ED : Emotional distress measurements

CD: Cognitive distress measurements

TI: Tinnitus intrusiveness measurements

SD: Sleep disturbances measurements

LMT: Loudness Matching Test

THI: Tinnitus Handicap Inventory

TQ: Tinnitus Questionnaire



Challenges and Learnings



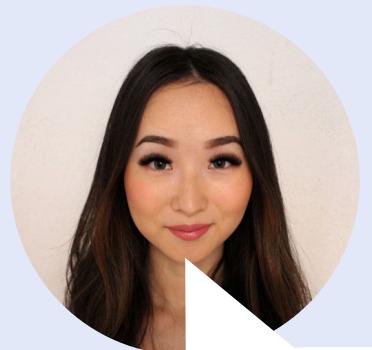
“During this project, I immersed myself in the worlds of Text Classification and Data Pre-Processing, ultimately tackling the challenge of training a model to create personalized tinnitus history flowcharts. It was a journey of profound learning, making this experience truly exceptional.”

“This project allowed me to explore data synthesis while using NLP and ML to analyze Tinnitus causes and outcomes. The absence of concise data posed a challenge, necessitating a distilled dataset from Tinnitus studies. Collaborating on this web app with passionate peers was truly enriching.”

“Throughout the project I encountered learning opportunities when working with new authentication systems and collaborating asynchronously with global team members who helped broaden my expertise. Working with cloud-hosted Postgres database deepened my understanding of cloud-based solutions and collaborating with team members enhanced my ability with meeting deadlines effectively.”



Challenges and Learnings



"Creating a website that looks and functions well on various devices and screen sizes presented a significant challenge. Crafting an appealing and user-friendly UI design demanded a balance between aesthetics and functionality. However, I honed my UI design skills, creating visually appealing interfaces that align with user expectations and project objectives!"



"Integrating machine learning models with a website posed a significant challenge. Additionally, fine-tuning complex language models demanded extensive experimentation. At the same time, working with machine learning peers enriched my knowledge of collaboration and problem-solving. The project deepened my understanding of tinnitus, offering insights for better support for myself!"

"Initially faced a challenge while integrating the JavaScript code into our main codebase, but with some dedicated time and effort, I managed to resolve the issue successfully. Data collection and the application of machine learning models proceeded smoothly. Now, I'm confident that our 'Create My MediMap' button works seamlessly, ensuring a smooth integration between the frontend and backend processes."





Future Plans

Our Mission towards Raising Awareness for Underrepresented Conditions

Include
Additional
Women Health
Subjects

Machine
Learning
Improvements

Specialists
Profiles for
Doctors and
Researchers



Thank you very much!

Presented by Sound Saviors

