

## Ideation Phase

### Brainstorm & Idea Prioritization


Date	18 October 2023
Team ID	Team-591549
Project Name	Audiometric AI: Transforming Hearing Test Diagnosis Through ML
Maximum Marks	4 Marks

#### Brainstorm & Idea Prioritization:

Brainstorming provides a free and open environment that encourages everyone within our Audiometric AI team to participate in the creative thinking process, aimed at transforming hearing test diagnosis through machine learning. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solution.




Reference: <https://www.mural.co/templates/empathy-map-canvas>


#### Step-1: Team Gathering, Collaboration and Select the Problem Statement




## Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

 10 minutes to prepare  
 1 hour to collaborate  
 2-8 people recommended

 **Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

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**A Team gathering**

Aaron Antony Noronha (21BAI10296)  
Simran Namdev(21BAI10472)  
Sayani Roy Chaudhury(21BCE10336)  
Shambhavi Pandey(21BAI10453)

**B Set the goal**

**Goal 1: Ideate Innovative ML Solutions**

- Brainstorm a range of innovative machine learning approaches that can significantly enhance the accuracy and efficiency of hearing test diagnosis.

**Goal 2: Prioritize High-Impact Ideas**

- Identify and prioritize the machine learning ideas that have the potential to make the most positive impact on hearing test diagnosis.

**Goal 3: Foster Collaborative Thinking**

- Encourage all team members to actively participate and collaborate, ensuring a diversity of perspectives and ideas are considered.

**Goal 4: Establish Clear Directions**

- Define clear directions for the development of AudiometricAI that leverage machine learning effectively to transform hearing test diagnosis.

**Goal 5: Identify Feasible Solutions**

- Evaluate the feasibility of the selected machine learning solutions, taking into account factors like cost, time, and resource availability.


**Goal 6: Create a Roadmap**

- Develop a preliminary roadmap outlining the key steps and milestones needed to implement the chosen machine learning solutions.

**1**

**Define your problem statement**


What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

 5 minutes

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**PROBLEM**

Traditional hearing tests often require frequent doctor visits, incurring consultation fees and additional expenses. To address these cost and time concerns, the development of a web application for predicting hearing test results is imperative. The primary aim of this organization is to empower individuals to anticipate their hearing test outcomes based on personal characteristics. This approach seeks to offer a cost-effective and less efficient means of monitoring and managing hearing health.



## Step-2: Brainstorm, Idea Listing and Grouping

2

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

#### TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Aaron		Sayani		Shambhavi		Simran	
<b>Gamification:</b> Make the testing process engaging through game-like elements.	<b>Offline Mode for Testing:</b> Allow users to download the test for offline use and sync results later.	<b>AI Chatbot for Support</b>	<b>Telemedicine Integration:</b> Enable users to consult with a healthcare professional via video call for a fee.	<b>Research and Development:</b> Explore avenues for continuous innovation and investment in research to stay ahead in the field of audiology and machine learning.	<b>Interpretability:</b> Explore methods to make the AI's decisions more interpretable, ensuring trust and understanding among medical professionals and patients.	<b>Multi-Language Support:</b> Include options for different languages to reach a wider audience.	<b>Collaboration with Audiologists:</b> Involve audiologists in the development process, ensuring that the AI complements their expertise and provides valuable insights.
<b>Progress Tracking :</b> Enable users to track their hearing health over time and set goals.	<b>Market Expansion:</b> Make strategy for reaching a global market and possibly targeting emerging healthcare markets	<b>Offline Mode for Testing:</b> Allow users to download the test for offline use and sync results later.	<b>Multilingual and Accessibility:</b> Make the application accessible and user-friendly for people of various languages, abilities, and ages.	<b>Cloud Infrastructure:</b> Explore the use of cloud services for scalability and redundancy, especially as the user base grows.	<b>Data Security and Privacy:</b> Ensure compliance with data protection regulations to build trust.	<b>Integration with Health Records:</b> Enable users to upload and manage their health records for a more comprehensive assessment.	<b>Gamification:</b> Make the testing process engaging through game-like elements.
<b>Data Synchronization with Healthcare Systems:</b> Integration of the AudiometricAI with Electronic Health Records (EHRs) and other healthcare systems.	<b>Collecting High-Quality Audiometric Data:</b> Make strategies to gather a diverse dataset of audiograms, considering different age groups, hearing conditions, and demographics.	<b>Integration with Wearable Devices:</b> Allow users to connect their compatible devices for more accurate results.	<b>Mobile App Development:</b> Make design and development of a user-friendly mobile application for real-time hearing tests, considering factors like accessibility and simplicity.	<b>Clinical Validation:</b> Make strategies for conducting clinical trials and obtaining necessary approvals to validate the AI's accuracy and reliability.	<b>Feature Engineering:</b> Explore way to extract informative features from audiograms and patient data, potentially including frequency patterns, temporal changes, and metadata.	<b>Technology Advancements:</b> Explore the emerging technologies, like AI explainability, quantum computing, or improved hardware, could impact AudiometricAI in the future.	<b>Integration of Hardware:</b> Explore options for integrating with smartphone microphones or external audiometric devices to ensure accurate and reliable testing.

## Step-3: Idea Prioritization

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

#### TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

#### Data Collection and Diversity:

1. Strategies for diverse dataset.
2. Considering different age groups, hearing conditions, and demographics.

**User Experience and Accessibility:** 3. Making the application accessible for people of various languages, abilities, and ages.

**Integration of Hardware:** 4. Exploring options for integrating with smartphone microphones and external audiometric devices for accuracy.

**Progress Tracking:** 5. Enabling users to track their hearing health over time and set goals.

**Offline Mode for Testing:** 6. Allowing users to download tests for offline use and sync results later.

**Data Synchronization with Healthcare Systems:** 7. Integrating AudiometricAI with Electronic Health Records (EHRs) and other healthcare systems.

**Cloud Infrastructure:** 8. Exploring cloud services for scalability and redundancy as the user base grows.

**Telemedicine Integration:** 9. Enabling users to consult with healthcare professionals via video calls for a fee.

**Data Security and Privacy:** 10. Ensuring compliance with data protection regulations to build trust.

**Interpretability:** 11. Exploring methods to make AI decisions more interpretable, ensuring trust and understanding among medical professionals and patients.

**Integration with Health Records:** 12. Enabling users to upload and manage their health records for a comprehensive assessment.

**Collaboration with Audiologists:** 13. Involving audiologists in the development process to complement their expertise.

**Gamification:** 14. Making the testing process engaging through game-like elements.

4

## Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

### TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.

