Ideation Phase
Brainstorm & Idea Prioritization Template

Date	18 October 2023
Team ID	592869
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Project Name	Lip Reading using Deep Learning
Maximum Marks	5 Marks
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Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. 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 solutions.

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.

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

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

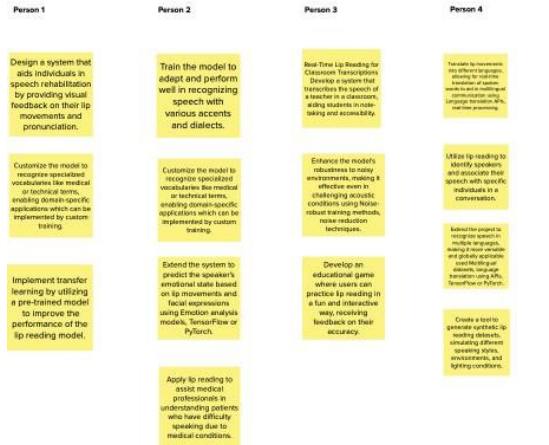# Step-2: Brainstorm, Idea Listing and Grouping

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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!

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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 and 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.

Person 1

- Design a system that aids individuals in speech rehabilitation by providing visual feedback on their lip movements and pronunciation.
- Customize the model to recognize specialized vocabularies like medical or technical terms, enabling domain-specific applications which can be implemented by custom training.
- Implement transfer learning by utilizing a pre-trained model to improve the performance of the lip reading model.

Person 2

- Train the model to adapt and perform well in recognizing speech with various accents and dialects.
- Customize the model to recognize specialized vocabularies like medical or technical terms, enabling domain-specific applications which can be implemented by custom training.
- Extend the system to predict the speaker's emotional state based on lip movements and facial expressions using Emotion analysis models, TensorFlow or PyTorch.
- Apply lip reading to assist medical professionals in understanding patients who have difficulty speaking due to medical conditions.

Person 3

- Real-Time Lip Reading for Classroom Transcriptions Develop a system that transcribes the speech of a teacher in a classroom, aiding students in note-taking and accessibility.
- Enhance the model's robustness to noisy environments, making it effective even in challenging acoustic conditions using Noise-robust training methods, noise reduction techniques.
- Develop an educational game where users can practice lip reading in a fun and interactive way, receiving feedback on their accuracy.

Person 4

- Translate lip movements into different languages, allowing for real-time translation of spoken words to aid in multilingual communication using Language translation APIs, real-time processing.
- Utilize lip reading to identify speakers and associate their speech with specific individuals in a conversation.
- Extend the project to recognize speech in multiple languages, making it more versatile and globally applicable used Multilingual datasets, language translation using APIs, TensorFlow or PyTorch.
- Create a tool to generate synthetic lip reading datasets, simulating different speaking styles, environments, and lighting conditions.

1) Core Lip Reading Functionality:

1. Real-Time Lip Reading Application
2. Lip Reading for Multiple Languages
3. Improved Performance with Transfer Learning

2) Enhancements and Adaptations:

1. Enhanced Privacy with Edge Computing
2. Visual Lip Reading Dataset Generation
3. Multi-Speaker Lip Reading
4. Adaptive Lip Reading for Diverse Accents
5. Lip Reading for Noisy Environments
6. Lip Reading for Specialized Vocabulary

3) Assistance and Accessibility:

1. Adaptive Lip Reading for Speech Rehabilitation
2. Integration with Augmented Reality (AR)
3. Lip Reading for Authentication
4. Real-Time Lip Reading for Classroom Transcriptions
5. Lip Reading for Medical Applications

4) Multi-Modal and Specialized Applications:

1. Lip Reading for Emotional Analysis
2. Cross-Modal Integration
3. Interactive Lip Reading Game
4. Lip Reading Accessibility Plugin
5. Real-Time Translation of Lip Movements
6. Lip Reading for Speaker Identification

Step-3: Idea Prioritization

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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.

Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

- Create a tool to generate synthetic lip reading datasets, simulating different speaking styles, environments, and lighting conditions.
- Develop an application using Python, OpenCV, TensorFlow or PyTorchthat can perform lip reading in real-time using a live video feed from a camera.
- Enhance the model's robustness to noisy environments, making it effective even in challenging acoustic conditions using Noise-robust training methods, noise reduction techniques.
- Apply lip reading to assist medical professionals in understanding patients who have difficulty speaking due to medical conditions.
- Extend the project to recognize speech in multiple languages, making it more versatile and globally applicable used Multilingual datasets, language translation using APIs, TensorFlow or PyTorch.
- Develop an educational game where users can practice lip reading in a fun and interactive way, receiving feedback on their accuracy.
- Utilize lip reading to identify speakers and associate their speech with specific individuals in a conversation.

Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)