Template

Lip Reading using Deep Learning

The project aims to develop an end-to-end machine learning solution for word detection in videos using deep learning, specifically LSTM and neural networks. This system will enhance traditional speech recognition, especially in noisy settings, while eliminating the need for transcribed audio data. It enables multi-modal applications and significantly improves accessibility for individuals with hearing impairments by serving as a crucial communication tool.

WHO are we empathizing with?

Who is the person we want to understand?
What is the situation they are in?
What is their role in the situation?

Those with hearing impairments who lean on lip reading for effective conversations.

Those in scenarios where clear speech is vital, resorting to lip reading.

GOAL

They may need to decide when to ask for clarification or to seek a more conducive communication environment.

Success is evident when they engage in meaningful conversations and accurately understand information through lip reading.

They could decide whether to seek out well-lit areas for better visibility during interactions.

What do they need to DO?

What do they need to do differently?
What job(s) do they want or need to get done?
What decision(s) do they need to make?
How will we know they were successful?

They've to actively engage as listeners and in maintaining effective communication, relying on lip reading.

Individuals reliant on lip reading for communication in noisy or muted environments.

Their success is measured by their ability to navigate environments and situations relying on visual information.

They might need to decide whether to disclose their reliance on lip reading in a given situation.

What do they HEAR?

What are they hearing others say?
What are they hearing from friends?
What are they hearing from colleagues?
What are they hearing second-hand?

They might hear about situations where clear enunciation or visible speech was particularly helpful.

Others may express frustration over the need to repeat themselves or speak slowly for effective lip reading.

Colleagues may express understanding or frustration regarding the need for visual communication strategies.

They might hear about the importance of clear face-to-face communication for lip reading success.

They may hear about instances where crucial information was missed due to communication barriers.

Some may voice concerns about the limitations of lip reading in complex or fast-paced conversations.

Individuals may appreciate the effort put into lip reading, acknowledging the additional attention required.

What do they THINK and FEEL?

PAINS

What are their fears, frustrations, and anxieties?

Advocacy: Frustration and anxiety about advocating for accessibility.

Communication Barriers: They fear miscommunication and misunderstanding.

Mis-understandings: They fear being misinterpreted or misinterpreting others.

There's a fear of being stigmatized or treated differently. This fear can lead to social anxiety and self-esteem issues.

Employment Concerns: Anxieties about job opportunities and advancement.

The fear and frustration of dealing with technical issues related to assistive devices, captioning, or communication apps.

GAINS

What are their wants, needs, hopes, and dreams?

Deaf and Hard of Hearing people: Provides visual language cues for better communication.

Language Learning: Enhances pronunciation and language learning.

Communication Aids: Helps those with speech difficulties communicate effectively.

Ensures clarity in noisy settings.

Speech Therapy: Aids in speech improvement with visual feedback.

Accessibility: Enables full participation in society, education, and work.

What other thoughts and feelings might influence their behavior?

The level of self-confidence can impact how individuals with hearing impairments interact with others. Those who feel more self-assured may engage in social situations more actively, while those with lower confidence may withdraw.

The fear of discrimination or negative judgments based on their hearing impairment can influence their behavior, leading to guarded interactions.

Feelings of emotional well-being and contentment can lead to more positive and active social engagement.

They take in the visual aspects of their surroundings, using this information to navigate their environment.

They pay attention to non-verbal cues like facial expressions and body language to understand conversations.

Visual media, such as movies, TV shows, and online content, which may or may not be captioned.

What do they SEE?

What do they see in the marketplace?
What do they see in their immediate environment?
What do they see others saying and doing?
What are they watching and reading?

They may advocate for environments and situations that facilitate visual communication.

What do they SAY?

What have we heard them say?
What can we magine them saying?

They've mentioned how well-lit environments significantly improve their ability to lip read accurately.

They've shared experiences where they've had to request others to speak clearly and face them.

They've expressed appreciation for colleagues who proactively ensure effective visual communication.

They may share strategies for effectively communicating their needs, such as using specific gestures or asking for written information.

They could express the importance of accessible communication tools, like captioning, in media consumption.

They express gratitude for individuals and settings that demonstrate understanding and consideration for their communication needs.

What do they DO?

What do they do today?
What behavior have we observed?
What can we imagine them doing?

We've noticed them maintaining strong eye contact during conversations to better lip read.

They often position themselves strategically, choosing spots where they can best see speakers' lips.

They often use mobile apps that provide real-time captioning to enhance their comprehension.

We can imagine them attending workshops or classes to further develop their lip reading skills.

They might engage in online forums or communities to share experiences and learn from others facing similar challenges.

They routinely engage in phone conversations, using video calls with clear visuals to support lip reading.

They often use gestures and facial expressions to supplement lip reading and ensure smoother communication.

We've seen them patiently and politely request others to speak clearly in situations where lip reading is crucial.