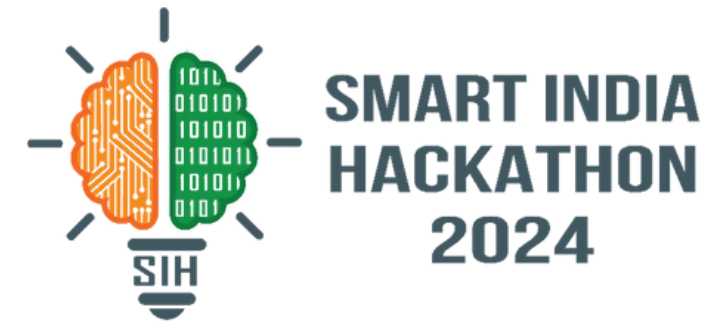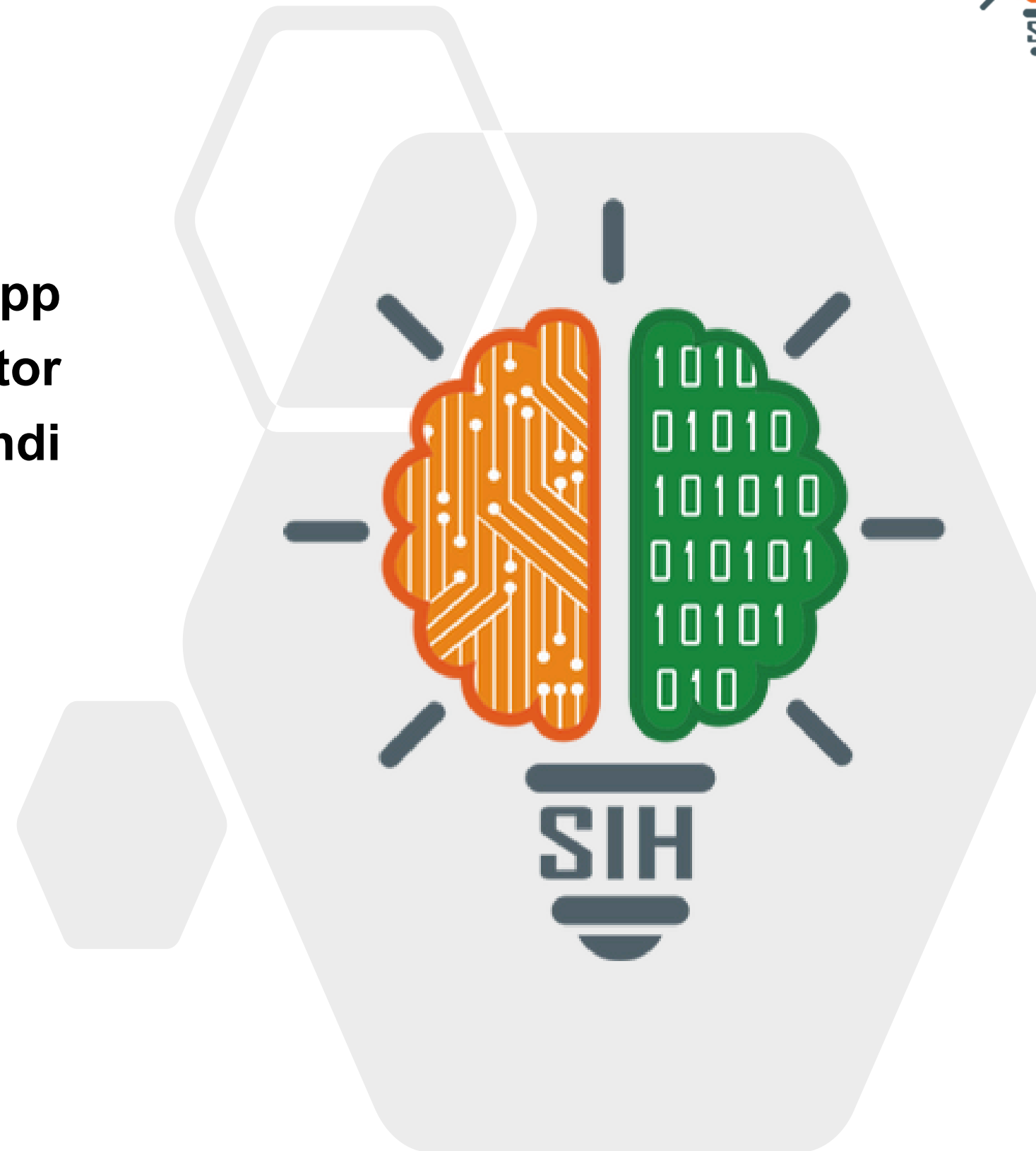# SMART INDIA HACKATHON 2024

- **Problem Statement ID – 1715**

- **Problem Statement Title - AI tool/mobile app for Indian Sign language(ISL) generator from audio-visual content in English/Hindi to ISL content and vice-versa**

- **Theme- Miscellaneous**

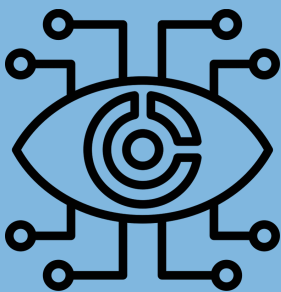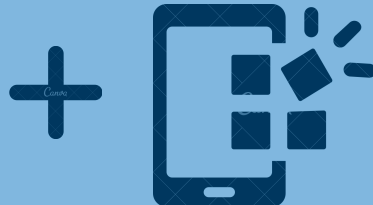- **PS Category- Software**

- **Team Name - Pookie Army**

SILENT VOICES

Our Solution

An AI integrated mobile app/ website to convert speech into ISL and vice versa

Audio

Phone mic
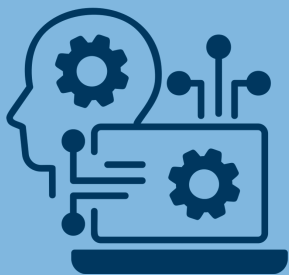
Input to output

sign

AI model
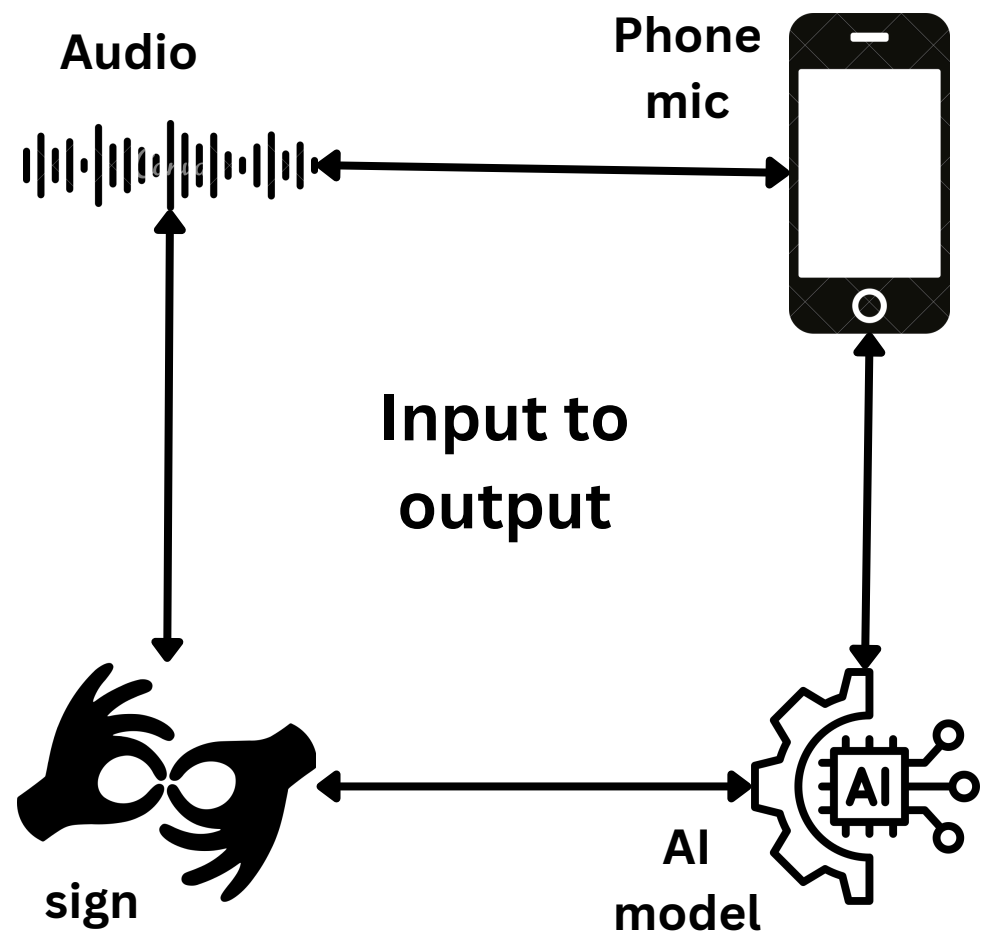
What makes us Unique

Computer vision integrated model for accurate sign detection
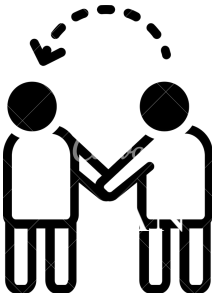
http:// + Website + app for diverse use cases

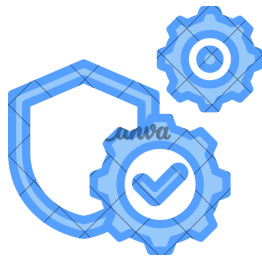Reinforcement learning to constantly reduce errors
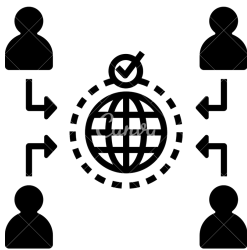
Current problems
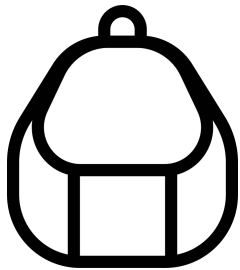
Lack of interpreters

Overdependence on interpreters

No check mechanism

What do we improve?

Easy access

Promotes independence

Constantly improving

TECHNICAL APPROACH
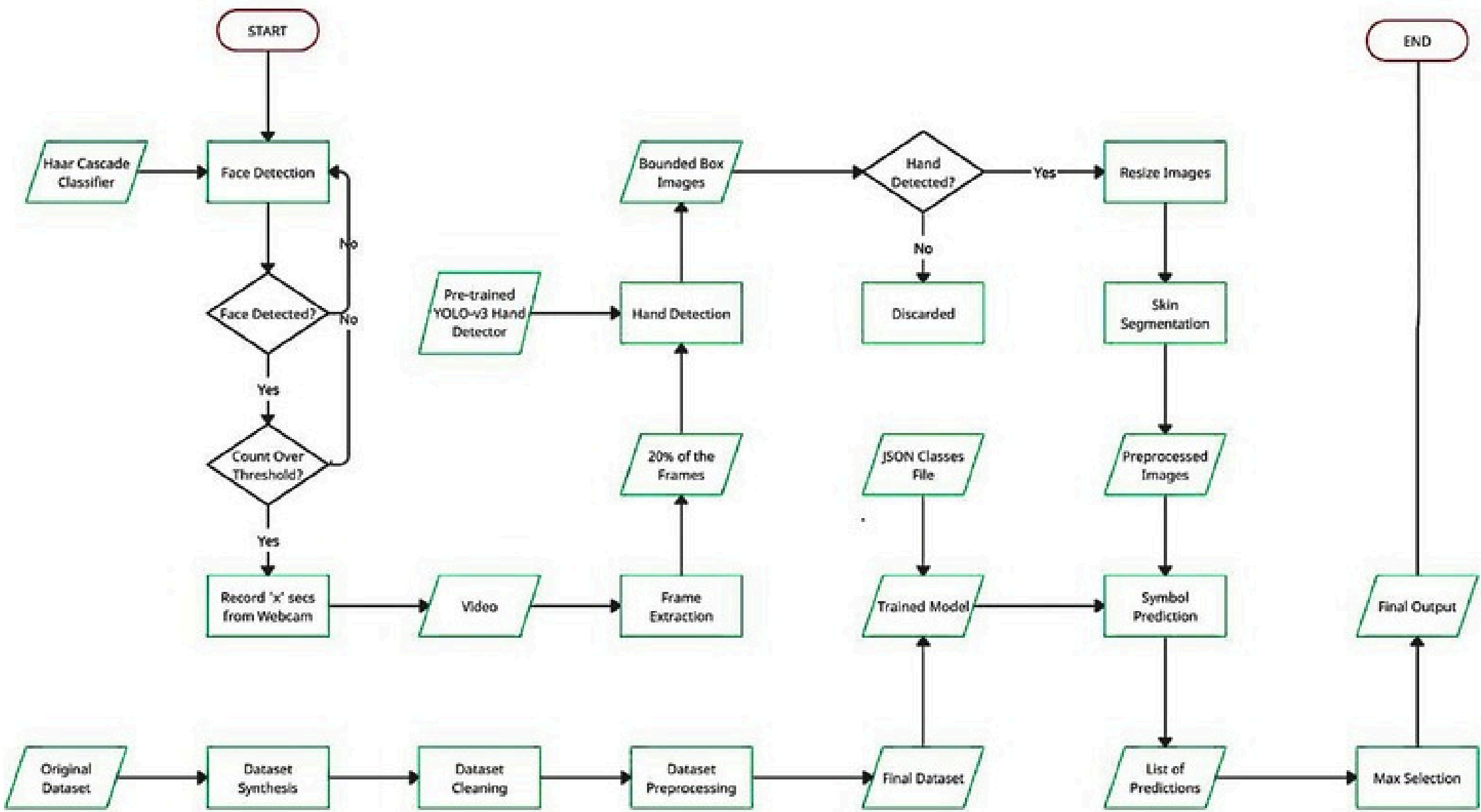
Frontend language:			
Javascript			
Framework			
React Next.js for optimized rendering, React Native			
Tech Stack			
MERN Stack			
Backend			
Node framework for managing the requestes and responses.			
For data analysis and response generation			
Python OpenCV Module.			

CLICK HERE → Post request sent to the server → API call to Sign language mode → Input Processing → Output sent back → Respond back to the client side

FEASIBILITY AND VIABILITY

Feasibility

- No logistics required
- Accessible anytime and anywhere
- Free of cost
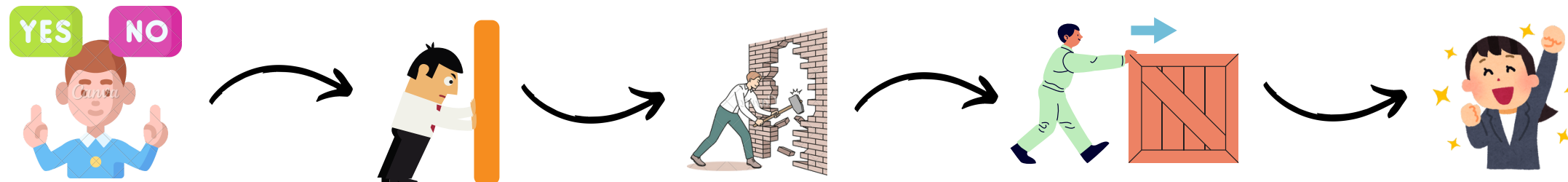- Gives privacy, as no human translator

The driving forces

- 63 Million Indians suffer from auditory impairment
- Only 388 Schools and no colleges specifically for deaf people
- 1 Billion internet users with 10-15% annual increase
- Awareness among people to uplift the Divyaang

Easy-to-use User Interface

Sign Language to Audio Conversion

Hello, how are you?

Audio to Sign Language Conversion

Tap to speak

Hello, how are you?

Challenges

- Accuracy of model
- Lack of awareness
- No access to smart phones
- Local language speakers

Combating these challenges

- Keep training model with updated datasets
- Making it a pre-installed application on smartphones
- Government can distribute smartphones for free
- Gradually increase number of available languages

SILENT VOICES

Please rate us

Give your valuable feedback so we can improve

Comments….

IMPACT AND BENEFITS

Impact

- More Employment Opportunities
- Revolutionisation of education sector

- Easy communication during medical emergency
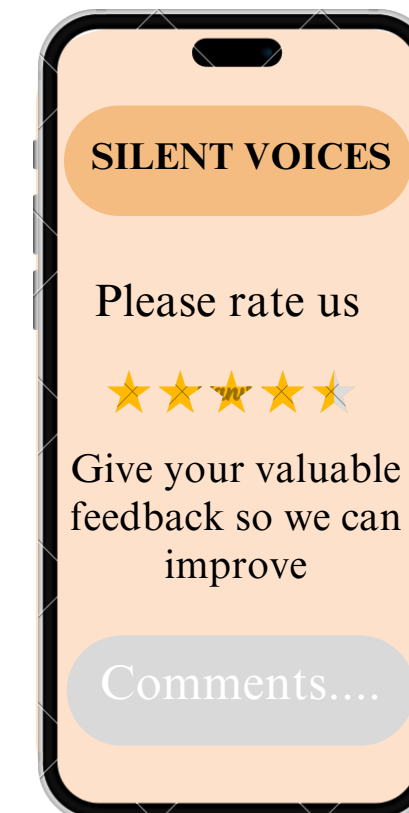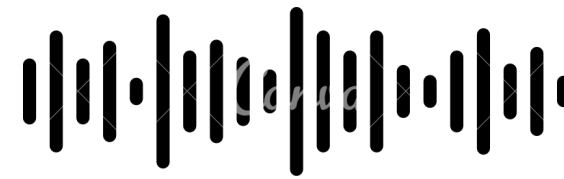- Empowerment and independence
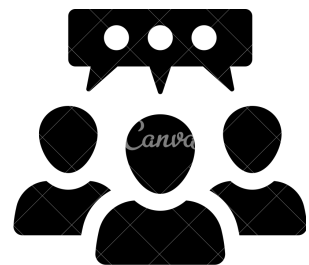
Social

- **Reduced Isolation**: Participation in community activities, fostering better integration into society.
- **Increased Accessibility**: Information and services
- **Improved lifestyle and their condition**

Environmental

- **Efficient Resource Utilization**
- **Lower Carbon Footprint:** Due to digital communication

Economical

- **Increased Workforce Participation**
- **Market Expansion**
- **Reduced Dependence on Human Interpreters**

RESEARCH AND REFERENCES

Research Paper IEEE- https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7449921

Number of deaf people in India - https://www.who.int/india/campaigns/world-hearing-day-2023#:~:text=WHO%20estimates%20that%20in%20India,suffering%20from%20Significant%20Auditory%20Impai rment.

Number of internet users in India - https://timesofindia.indiatimes.com/technology/tech-news/india-now-has-936-16-million-internet-subscribers-trai/articleshow/109537789.cms
https://www.statista.com/statistics/255146/number-of-internet-users-in-india/#:~:text=The%20number%20of%20internet%20users,growth%20in%20access%20to%20internet.