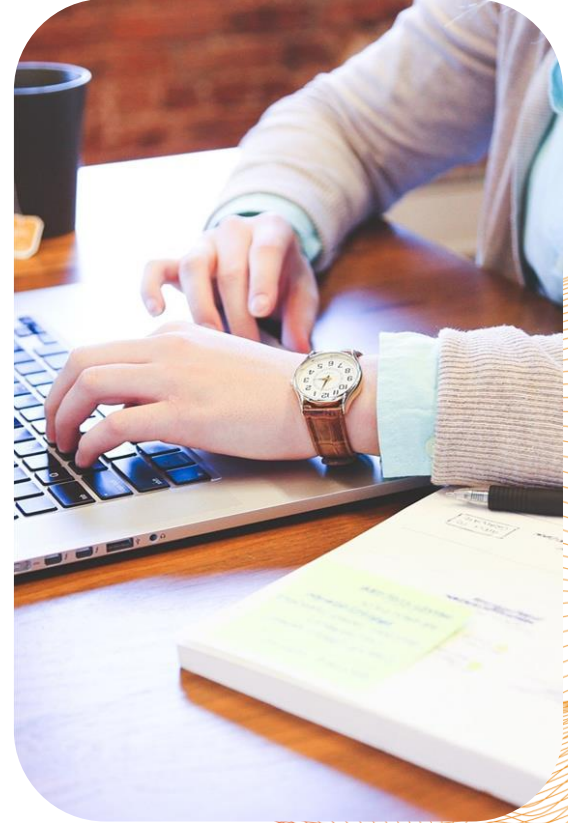




Team and Theme

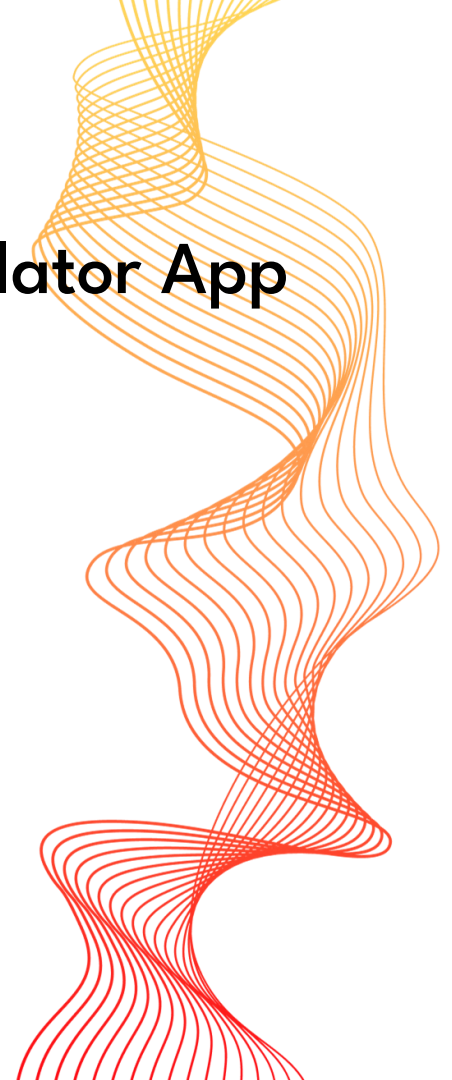
- Team name - Rambo
- Theme - Recognition and Prediction System
- Project name - Silent Speaker





Silent Speaker - A Sign Language Translator App

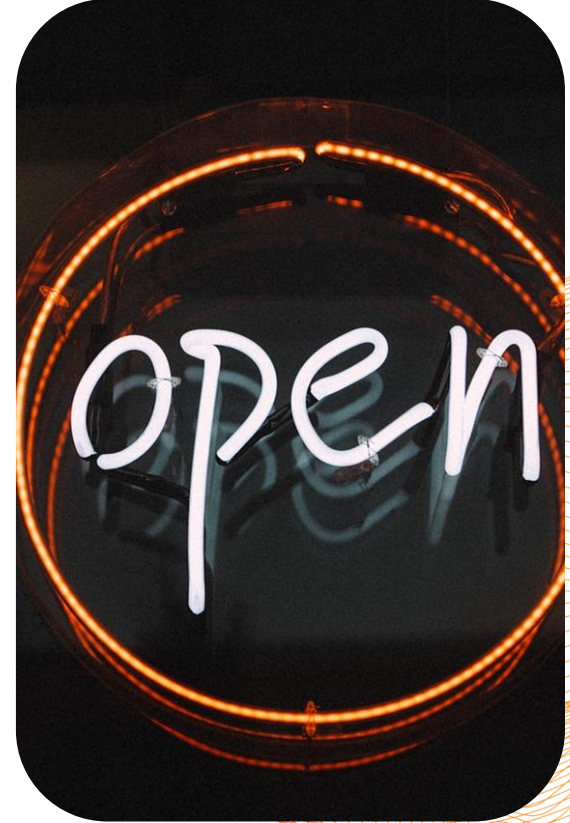
This project report describes the development of "Silent Speaker," an app designed to break down communication barriers between individuals with hearing impairments and those who do not know sign language. Using image recognition and machine learning algorithms, Silent Speaker translates sign language gestures into alphabets and sentences.





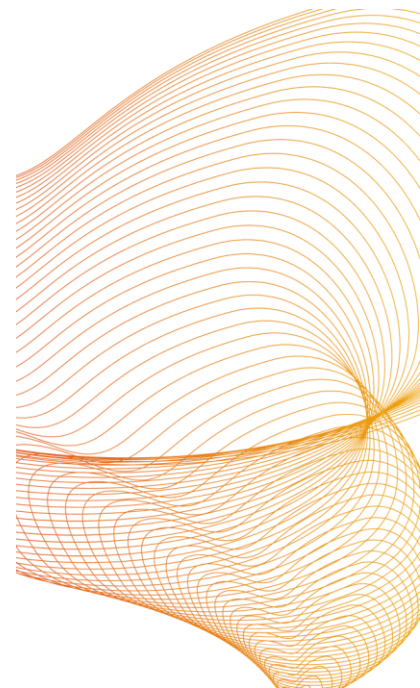
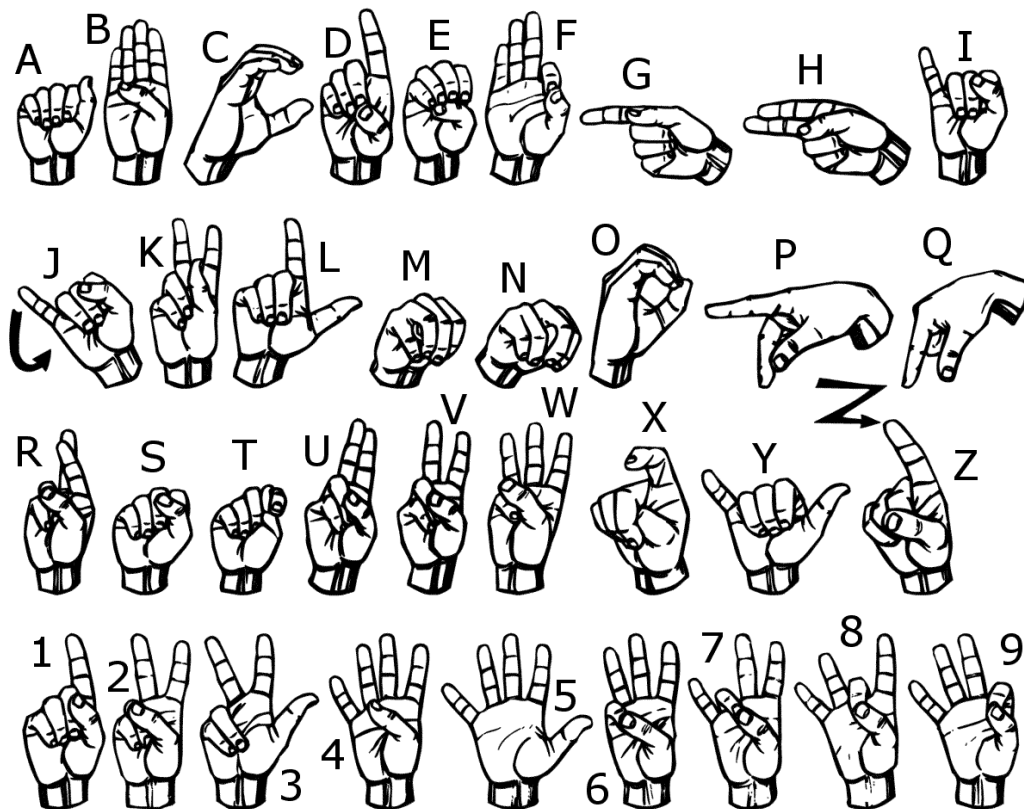
Introduction

- Sign language is a visual language used by individuals with hearing impairments.
- Communication can be challenging between sign language users and those who do not know the language.
- Silent Speaker aims to break down this communication barrier.





American Sign Language





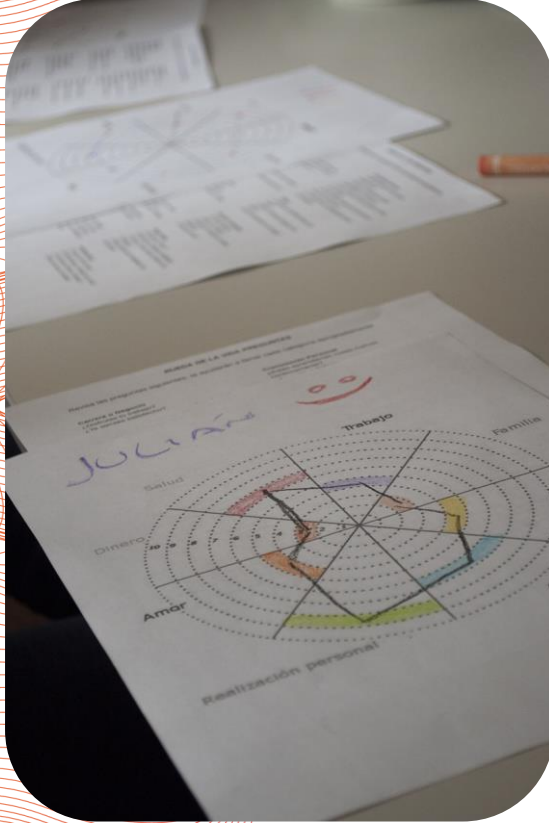
Overview of Silent Speaker

- Breaks down communication barriers between individuals who know and do not know sign language.
- Uses image recognition and machine learning algorithms to translate sign language gestures into alphabets and words.



Objectives

- Develop an accurate and reliable sign language recognition system.
- Integrate a sign language recognition system with an alphabet conversion system.
- Design a user-friendly interface.



Methodology

- Involved several stages, including data collection, preprocessing, feature extraction, classification, and alphabet conversion.
- A large dataset of sign language videos was collected and used to train a deep learning model.
- OpenCV library was used for preprocessing and feature extraction, and a convolutional neural network (CNN) was used for classification.

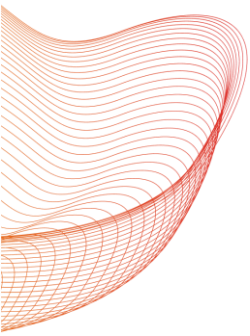


How Silent Speaker Works

The app captures an image of the sign language gesture using the device's camera.

The image is sent to the machine learning algorithm, which translates the gesture into alphabets and words.

The translated message is displayed on the app's interface.





Sign Language Recognition

- Sign language recognition system developed using a large dataset of sign language videos.
- Deep learning model trained to recognize different signs and gestures.
- OpenCV library used for preprocessing and feature extraction.
- CNN used for classification.



Alphabet Conversion System

- Alphabet conversion system integrated with sign language recognition system.
- Pre-defined mapping of sign language gestures to English alphabets used to produce alphabets corresponding to each sign.





User-Friendly Interface

- User-friendly interface designed using Android Studio.
- Interface implemented with the sign language recognition and alphabet conversion systems.





Benefits

- Silent Speaker allows individuals with hearing impairments to communicate effectively with people who do not know sign language.
- It reduces communication barriers and makes communication easier and more accessible for hearing-impaired people.



Challenges

- Developing a comprehensive dataset with different sign variations was challenging.
- Preprocessing and feature extraction required multiple iterations.
- User testing helped identify issues and improve the app's design.

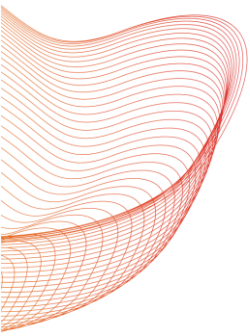


Future Scope

Expanding datasets to include more sign variations.

Improving the accuracy of the sign language recognition system.

Expanding the app to include more languages.





Conclusion

- Silent Speaker has the potential to break down communication barriers between individuals with hearing impairments and those who do not know sign language.
- The app uses image recognition and machine learning algorithms to translate sign language gestures into alphabets and sentences.
- Future works include expanding the dataset and improving the accuracy of the sign language recognition system.



Thank you for your time and attention 😊