Learning app for Deaf and Mute and sign language English to Gujarati Converter

- Bridging the Communication Gap

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Introduction

The app focuses on empowering deaf and mute individuals by providing an intuitive and interactive platform to learn Indian Sign Language (ISL).

It also includes real-time gesture-to-text translation between English and Gujarati, making communication more accessible for users.

The goal is to bridge the gap in communication for deaf and mute individuals through technology, offering both offline learning and real-time translation via gesture recognition.

Motivation and Background

Communication Barriers

Deaf and mute individuals face significant communication challenges due to the lack of accessible tools that support sign language.

Digital Inclusion

The project aims to bridge this gap by providing a tool that supports both English and Gujarati, promoting inclusivity for deaf individuals.

Problem Statement

- Multilingual support, especially for regional languages like Gujarati.
- Real-time gesture-to-text recognition.
- Offline accessibility for continuous learning without internet connectivity.

Literature survey - Gesture Recognition in Sign Language

Machine Learning and Computer Vision

Gesture recognition is a growing field, leveraging machine learning and computer vision techniques like CNNs.

Challenges and Opportunities

While there are advancements, challenges remain in achieving high accuracy and real-time performance in ISL recognition.

Source: Nguyen, D., & Hong, S. (2019). "Deep Learning for Gesture Recognition in Sign Language." International Journal of Computer Science.

Gesture Recognition Methods

Sensor-Based

Utilizes gloves and devices to capture gesture data.

Vision-Based

Employs cameras and deep learning models to analyze gestures.

Real-Time Gesture Recognition

1

Instant Feedback

Real-time recognition systems process user input instantly, offering feedback within seconds.

2

Deep Learning Models

These systems identify and translate gestures with high accuracy using deep learning models.

Challenges in Gesture Recognition

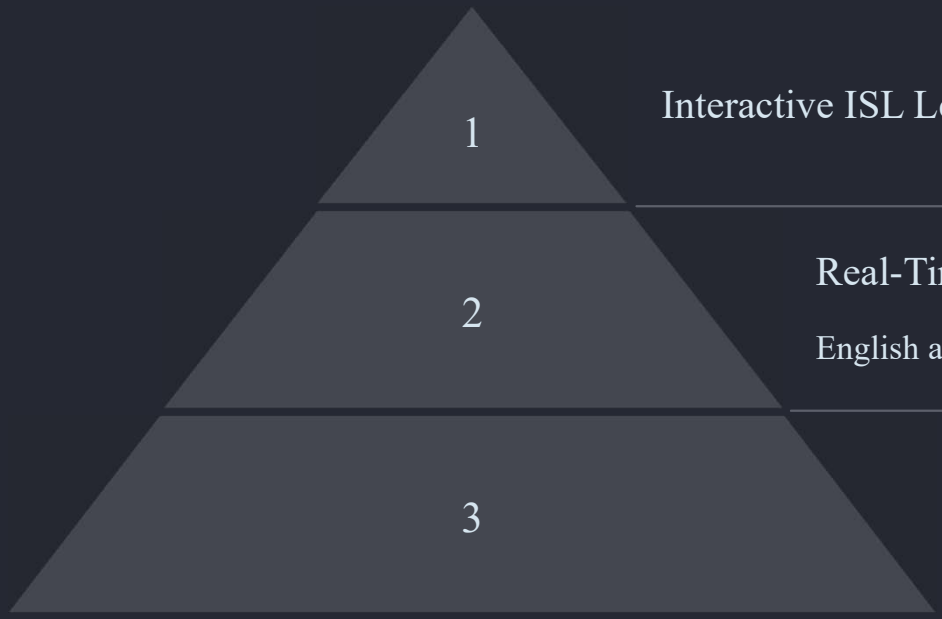
1 Environmental Factors

Challenges include poor lighting, background noise, and differentiating between similar gestures.

2 Data and Performance

Limitations involve training models with sufficient data and ensuring real-time performance on mobile devices.

Proposed System



Interactive ISL Learning

Real-Time Translation

English and Gujarati.

Offline Accessibility

Project Scope

1

ISL to English & Gujarati

2

Learning offline

Gesture images.

3

Live Gesture Capture

Camera.

Future Enhancements

1 Expanding ISL Library

2 Gamified Learning

Quizzes and tests.

3 Globalized version

Multilingual app.

Conclusion

1

Bridging the Gap

The app will address the communication gap by providing a seamless learning experience for ISL and its translation.

2

Practical Tool

The app's offline functionality make it accessible without internet.

3

Live Gesture Capture

The app's real-time recognition functionality make it accessible for all.