KANNADA AUDIO TO INDIAN SIGN LANGUAGE TRANSLATOR

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Introduction:

In a world where communication is essential for social interaction and professional engagement, individuals with hearing impairments often face significant challenges in accessing information and fully participating in society. The barriers posed by spoken language further complicate these difficulties, highlighting the urgent need for solutions that enable seamless communication. Motivated by the principles of inclusivity and accessibility, our project is dedicated to developing a system that converts Kannada audio into Indian Sign Language (ISL), specifically tailored to the needs of the Kannada-speaking community and ISL users. By bridging linguistic gaps, our project aims to empower individuals with hearing impairments, fostering greater participation and accessibility in an increasingly interconnected world.

Objectives:

- To translate Kannada audio to English language keywords
- To convert the English Language keywords to Indian Sign Language (ISL)
- To use the Blender 3D tool to make a simulation of the sign languages.
- To design an Interface to enable seamless interaction

Methodology:

The application allows users to speak into a microphone, converting their speech into text. It identifies keywords from the entered text and displays corresponding sign

language videos for those keywords. The project aims to develop a Django web application that facilitates the conversion of spoken Kannada audio into text, translates it into English, extracts keywords, and displays corresponding sign language animations made using Blender 3D Tool. The application comprises a user-friendly interface where users can either upload audio files or input text directly. Upon submission, the application utilizes the Speech Recognition library to transcribe the audio, and the Google Translate API to convert the recognized Kannada text to English. Subsequently, keywords are extracted from the translated text using natural language processing techniques, specifically leveraging the NLTK library for lemmatization and filtering out stopwords. The extracted keywords are matched with sign language video files, which are played in sequence as the keywords are displayed. The frontend employs HTML and JavaScript to create an interactive experience, including features such as speech recognition activation and video playback control. Overall, the application integrates various technologies and libraries to provide an accessible tool for bridging communication gaps, particularly in the context of sign language interpretation.

Result and Conclusion:

The results of our project demonstrate efficient translation of Kannada audio into English keywords, accurately covering a wide range of words in the Kannada language. Furthermore, the system successfully maps these keywords to corresponding Indian Sign Language (ISL) animations, ensuring seamless communication for users. The synthetic ISL animations produced are clear and easily understandable by individuals with hearing impairments. Additionally, the project offers a user-friendly interface that provides a smooth, intuitive experience, even for first-time users. In conclusion, the project achieves its goal of enhancing communication accessibility by delivering an effective and inclusive solution for the Kannada-speaking deaf community.

Future Scope:

The future scope of this project includes:

- Increase the number of Kannada phrases and include more complex and everyday communication scenarios.

- Add facial expressions, body language, and emotional cues to improve the realism and clarity of sign animations.
- Allow users to customize their own avatars to make the experience more engaging.
- Convert the website into a mobile app and incorporate continuous feedback from the deaf community and language experts.
- Expand the system to support translations from other Indian languages as well.