



Sign language to text convertor

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Application

- Accessibility: Enables deaf individuals to communicate more easily.
- Education: Helps deaf students in mainstream classrooms.
- Healthcare: Improves communication between patients and providers.
- Customer Service: Allows independent interactions in public settings.
- Media: Adds accessible subtitles to videos.

Resources used

- OpenCV (cv2): For webcam video capture and displaying frames.
- MediaPipe: For detecting hand landmarks in real time.
- Scikit-learn (pickle): For loading and using the pre-trained model to make predictions.
- Pyttsx3: For converting the recognized text into speech.

Dataset: created by us for maximum accuracy

Project Goals

Landmark detection

MediaPipe Hands are used to extract hand landmarks (x, y coordinates) from each sign language image. Only classes with enough samples are saved, creating a labeled dataset stored in a pickle file for model training.

Traning and Testing

the dataset is split into training and testing (80%/20%) and trains a Random Forest classifier on the training data. It then tests the model on the test set, calculates the accuracy, and saves the trained model in a pickle file for future use.

Prediction

a webcam and MediaPipe is used to recognize sign language in real time. they captures hand landmarks, predicts the corresponding character using a pre-trained model, and displays the prediction. The recognized characters are added to an output string. Once the timer expires, the character is added to the output.

Optionally, the recognized sentence can be spoken using text-to-speech (pyttsx3)..



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**Thank
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