INTEL AI HACKATHON

Coding Ninjas

Problem Statement

This AI solution aims to facilitate real-time translation of sign language into spoken language or text, thereby enhancing accessibility for the deaf and hard of hearing individuals.

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1) SOLUTION:

The development of the app involves creating a comprehensive solution to facilitate real-time translation of sign language into English text and subsequently into various Indian languages, enabling easy communication for the deaf and hard of hearing individuals in their regional languages.

Gesture Recognition and Translation: Implement computer vision and natural language processing (NLP) algorithms to recognize hand expressions, convert them into English text, and then translate the text into Indian languages.

Speech Synthesis: Integrate text-to-speech functionality to audibly output the translated text in Hindi, Tamil, Telugu, and Malayalam, allowing users to communicate through spoken language.

User Interface and Accessibility: Design an intuitive user interface with options for regional language selection and accessibility features to cater to the diverse linguistic needs of the users.

Real-time Performance Optimization: Ensure that the app operates in real-time, offering efficient translation and seamless communication through the laptop camera feed.

2)METHOD:

Computer Vision and Gesture Recognition

Utilize computer vision libraries like OpenCV and deep learning frameworks to capture and interpret hand expressions from the laptop camera feed.

Natural Language Processing (NLP): Implement NLP algorithms to convert the recognized hand expressions into English text, facilitating communication in the English language.

Language Translation : Integrate language translation APIs or libraries to further translate the English text into Indian languages, such as Hindi, Tamil, Telugu, and Malayalam, enabling communication in regional languages.

Text-to-Speech Synthesis : Incorporate text-to-speech functionality to audibly output the translated text in the selected regional language, providing spoken communication capabilities.

3)INTEL TOOL KITS USED:

1.**OpenVINO Toolkit** : Optimizing and deploying computer vision models, ensuring efficient gesture recognition and real-time performance.

2.Intel RealSense Depth Cameras : To capture precise hand expressions and movements, enhancing the accuracy of gesture recognition.

3.Intel AI DevCloud: Developing and testing the app, including machine learning algorithms for gesture recognition and NLP for language translation.