MANIPAL UNIVERSITY
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A Synopsis on

SIGN LANGUAGE TO AUDIO

carried out as part of the course

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1. Introduction

1.1 Objective of the project

The objective of the project focused on transalating sign language to audio which typically involves developing technologies that can accurately interpret and convert sign language gestures into spoken language or synthesized audio output.

1.2 Brief description of the project

The objective of a project focused on translating sign language to audio typically involves developing technology or systems that can accurately interpret and convert sign language gestures into spoken language or synthesized audio output. This project aims to bridge communication gaps between individuals who are deaf or hard of hearing, who primarily use sign language, and those who rely on spoken language.

2. Technology Used

2.1 Hardware Requirements

Memory-16 GB RAM for certain memory intensive tasks for loading and processing big datasets CPU-A multi-core CPU with decent clock speed is essential for running NLP tasks efficiently, especially during training and inference stages. Storage Adequate storage space would be needed to store the big datasets.

2.2 Software Requirements

- Python- main programming language.
- Tensorflow - helps to read the models.
- OpenCv - helps to detect hand gestures.
- Cvzone - helps to detect hand gestures.
- GoogleTeachable Machine - helps to train models of your own photos.

2.3 Libraries Used:

- tensorflow 2.12.0 – it is a free and open source software library for machine
- learning and artificial intelligence.
- opencv-python 4.9.0.80 – it is a library of programming functions mainly
- aimed at real-time computer vision.
- numpy 1.26.4 – it is a library for the python programming language , adding
- support for large, multi-dimensional arrays and matrices.
- python-math 0.0.1
- times 0.7 – it is module in python provides various functions for working with dates and times.

3. Future Scope

3.1 Scope for improvement:

1.The Future Scope section outlines potential enhancements and extensions to the project beyond its original release.
2.Future developments may include improving the accuracy of gesture recognition using additional training data or advanced machine learning algorithms.
3.Integration with Augmented Reality (AR) or Virtual Reality (VR) technologies could enhance user interaction and immersion. Additionally, expanding language support beyond the current set of gestures could increase accessibility to a wider user base.
4.Collaboration with sign language experts and communities could inform feature improvements and ensure cultural sensitivity. Continuous updates and iterations based on user feedback and technological advances will drive the project's development in the future.