SIGN LANGUAGE CONVERTER
A Major Project Synopsis Submitted to

Rajiv Gandhi Proudyogiki Vishwavidhyalaya, Bhopal
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SYNOPSIS

1. TITLE
Sign Language Converter

2. INTRODUCTION

Sign language is used by people who have speaking or listening disabilities so that they can exchange information between other people and within their own community. This can be used on a wide scale to make most of the public understand what a person is trying to convey to the world through sign language. This will prevent disabled people from hiring other people who can speak and understand sign language just to be their communicator.

Sign Language Converter is a machine learning program that detects and recognizes audio signals received to text using speech to text API (python modules or Google API) and then making a visual presentation (video) of the converted sign language which requires machine learning as a part.

Sign gestures can be majorly classified into two types, static and dynamic. The static gesture is simpler than dynamic gesture recognition, in a static only a single image is recognized at a time while on the other hand dynamic gesture is a moving gesture represented by various images. Various signs performed by the hand and convert it into text/speech.

2.1 PROJECT BENEFITS
i) It will help deaf & dumb people to communicate efficiently.
ii)   Sign language files can also be shared for documentation.

2.2 PROJECT SCOPE
i) This can be used to help disabled people.
ii) This can be used by people to understand sign language and help those people communicate through it.
iii) This can be used on a wide scale to make most of the public understand what a person is trying to convey to the world through sign language.
iv) This will prevent disabled people from hiring other people who can speak and understand sign language just to be their communicator.
v) This can be implemented with other technologies too like IoT, android and thus has a lot of scopes.

3. PROBLEM STATEMENT
People with hearing and speaking disabilities face problems in communicating with other hearing people without a translator. Sign language is a visual language that is used by deaf and dumb people as their mother tongue. Unlike acoustically conveyed sound patterns, sign language uses body language and manual communication to fluidly convey the thoughts of a person. It is achieved by simultaneously combining hand shapes, orientation, and movement of the hands,

arms or body, and facial expressions. It can be used by a person who has difficulties in speaking or by a person who can hear but could not speak and by normal people to communicate with hearing disabled people. As far as a deaf person is concerned, having access to sign language is very important for their social, emotional and linguistic growth. Sign language should be recognized as the first language of deaf people and their education can be proceeded bilingually in the national sign language as well as national written or spoken language.

4. OBJECTIVES
The following objectives are achieved in the project:-
i) Real-time translation.
ii) Eliminates the need for an interpreter between sign language and common speech.
iii) It does not require additional hardware.
iv) Easy to incorporate in any OS.

5. INTENDED USER
This project will help a person who has a learning disability to communicate with others and vice versa. Thus, eliminating the need for a translator between them.

6. EXISTING SYSTEM
6.1 PROCESS FLOW OF EXISTING SYSTEM
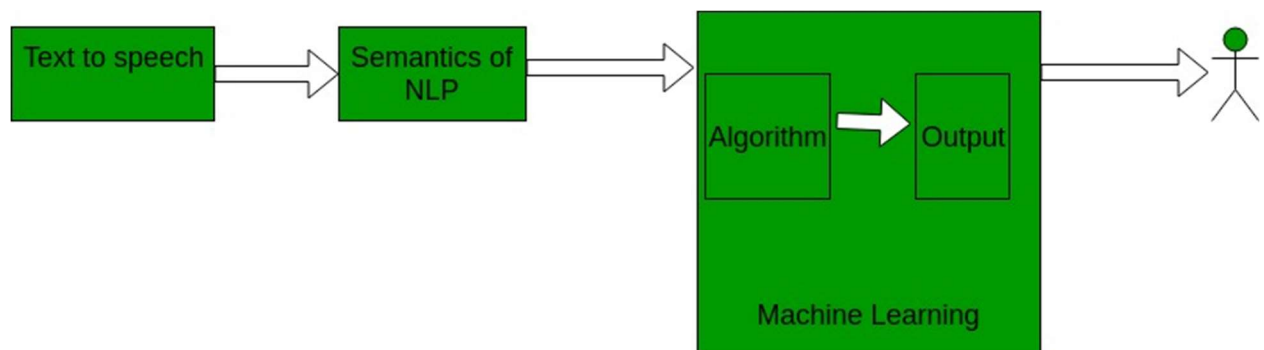
6.2 LIMITATIONS
Some limitations of the existing system are:
i) It can only work on images or videos.
ii) Uses image processing algorithms.
iii) Less efficient.
iv) Time-consuming.
v) Uses more memory as images and videos are loaded first.

7. PROPOSED SYSTEM

The current system that we are proposing would work on the processing of audio signals into text/video. It will actually identify the signs on a real-time basis which are in front of the machine or host that has a microphone and will tell us about the communications done in transcripts form to read. The current system will be developed in python and will work on a machine-learning algorithm that uses supervised learning as its basis. It will use a specified Dataset which will have information (Q&A) about a finite number of sign videos provided, using this information only the algorithm recognizes the nonverbal communication done in front of the machine.

7.1 SYSTEM FEATURES

i) Sign language can be converted to speech/text & vice-versa.
ii) Converted text & Sign language video files can also be shared.

7.2 HARDWARE REQUIREMENTS

i) **Processor**: Pentium, AMD or Higher Version
ii) **Operating System**: Windows XP/ Windows 7/ Linux
iii) **RAM**: 2GB recommended
iv) **Hardware Devices**: Keyboard with mouse
v) **Hard disk**: 10 GB or more
vi) **Display**: Standard Output Display
vii) **Voice Input**: Microphone (preferred)

7.3 SOFTWARE REQUIREMENT

i) Android Studio
ii) MySQL Server
iii) Python IDLE

8. EXPECTED OUTCOMES

An android application which will provide us with an easy way to communicate in sign language without even knowing it.

9. CONCLUSION

This is to conclude that the project that we undertook will work upon with a sincere effort. Most of the requirements will be fulfilled up to the mark and the requirements which will be remaining will be completed with a short extension. This project would definitely satisfy all the needs and help to the community of deaf people and people who are disabled to speak.

9.1 LIMITATIONS

i) Internet is required.
ii) It can only be used through an Android Smartphone.

9.2   FUTURE ENHANCEMENTS

i) To convert the input video of sign language into text/speech.
ii) An ios application to run this on.
iii) Make it portable.
iv) Good GUI.

10. REFERENCES

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Signature of the Candidate   Signature of the Guide   Signature of the Supervisor