

REAL TIME COMMUNICATION SYSTEM POWERED BY AI FOR SPECIALLY ABLED

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INTRODUCTION

By sharing their ideas, thoughts, and experiences with others around them, people come to know one another. There are several methods to do this, but the gift of "Speech" is the finest. Everyone can communicate their ideas clearly and comprehend to one another through speech. If we ignore those who don't have this wonderful gift, the deaf and dumb, it will be unjustified and stupid. The human hand has continued to be the favoured form of communication in these circumstances.

PURPOSE

The goal of the project is to develop a system that can translate sign language into a language that is understandable to regular people.

466 million people have disabling hearing loss

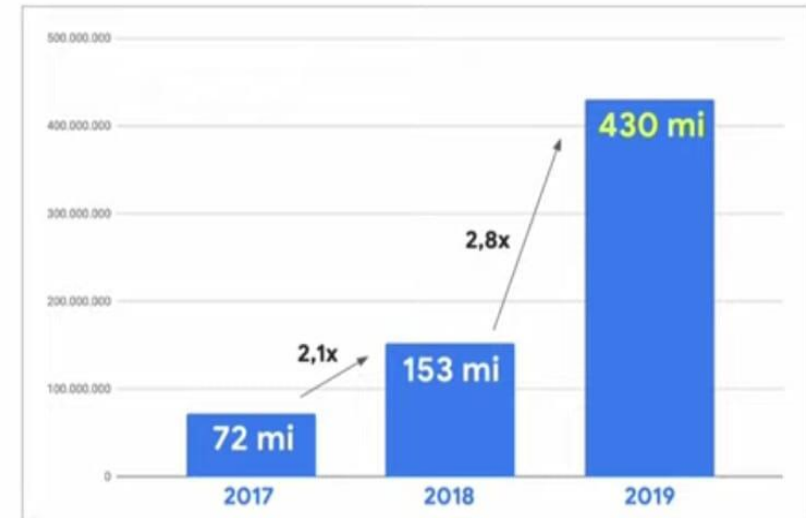
World Health Organization



80% of Deaf people are illiterate or semi-literate, and most of them exclusively use sign language to communicate.

World Federation of the Deaf (WFD)

Translations



PROBLEM STATEMENT

In our society, we have people with disabilities. The technology is developing day by day but no significant developments are undertaken for the betterment of these people. Communications between deaf-mute and a normal person has always been a challenging task. It is very difficult for mute people to convey their message to normal people.

Since normal people are not trained on hand sign language. In emergency times conveying their message is very difficult. The human hand has remained a popular choice to convey information in situations where other forms like speech cannot be used. Voice Conversion System with Hand Gesture Recognition and translation will be very useful to have a proper conversation between a normal person and an impaired person in any language.

SOLUTIONS

The project aims to develop a system that converts the sign language into a human hearing voice in the desired language to convey a message to normal people, as well as convert speech into understandable sign language for the deaf and dumb. We are making use of a convolution neural network to create a model that is trained on different hand gestures. An app is built which uses this model. This app enables deaf and dumb people to convey their information using signs which get converted to human-understandable language and speech is given as output.

SYSTEM REQUIREMENTS AND SPECIFICATIONS:

HARDWARE REQUIREMENTS:

Operating System: Windows, Mac, Linux

CPU : Multi Core Processor(i3 or above)

GPU :NVIDIA AI Capable / Google's TPU Webcam Integrated or External with Full HD Support

SOFTWARE REQUIREMENTS:

Python : v3.9.0 or above

Python Packages : Tensorflow, flask, keras, numpy , pandas, virtualenv , pillow, opencv-python

Web browsers : Mozilla Firefox, Internet Explorer, Google chrome

IBM Cloud : Watson Studio-Model Training & deployment as Machine Learning Instance

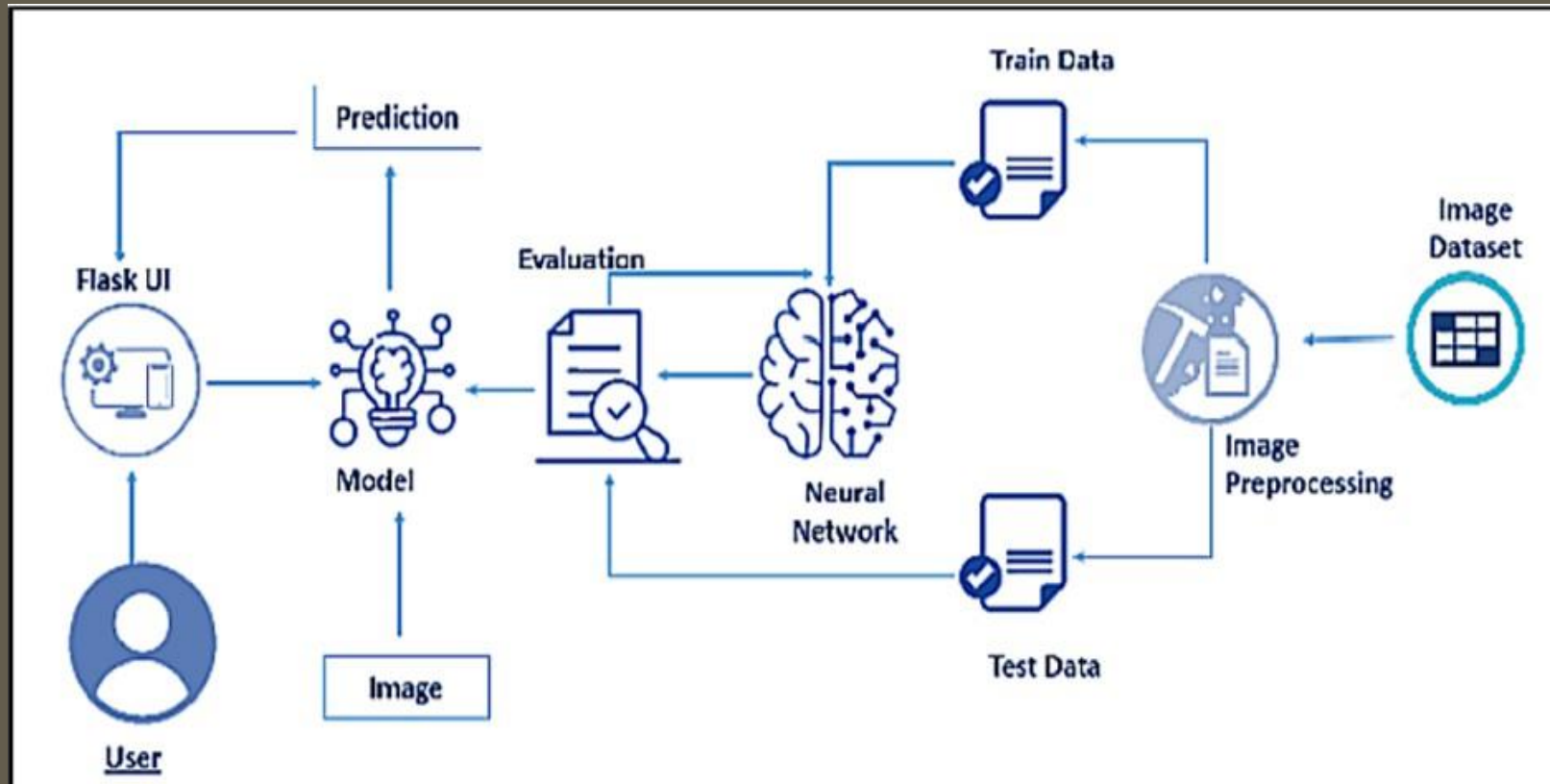
EXISTING SYSTEM

- Using a laptop or smart phone for communication is among the simplest methods. A screen reader can be used by someone who is blind or has low eyesight to hear the text being read aloud while a deaf person can type out what they wish to say. Whereas a blind person, can make use of voice to text option so that the deaf person can read the text through screen.
- Depending on how severely deaf they are, a blind person making use of speech may be able to talk to a deaf person. For instance, a deaf person might have sufficient residual hearing to understand the words of a person who is blind or has low eyesight. However, it greatly depends on the specific circumstances.

PROPOSED SYSTEM

- A model is trained on diverse hand gestures and is created using a convolution neural network. Using this an app can be created. Through the use of signals that are later converted into text that can be read by humans, this programme enables deaf and dumb people to communicate.

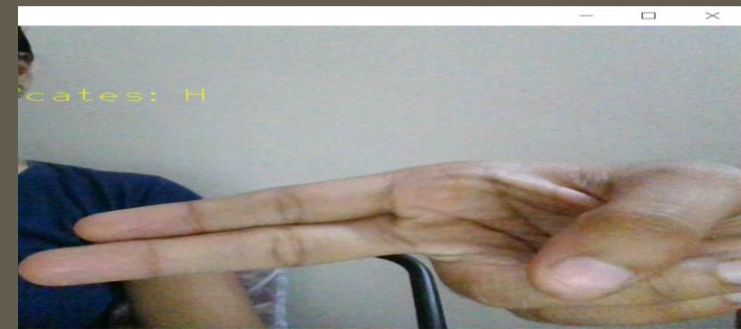
FLOWCHART



RESULT

A series of photos were used to implement and test the suggested approach. A set of 2250 photos of the alphabet from A-I are utilized for the testing database, while a set of 15750 images are used for the training database as soon as the gesture is recognized, it enables deaf and dumb people to convey their information using signs which get converted to human-understandable language and speech is given as output

- Below are some examples of the output images:



CONCLUSIONS

The use of sign language can help deaf and dumb to communicate more effectively. The technology strives to close the communication gap between the deaf community and the rest of society because it supports two-way conversation. The suggested method converts language into English alphabets that people can read and write. This system transmits the model hand movements, which it recognise and responds to by displaying the corresponding alphabet. People who are deaf-mute can utilize sign language with their hands, which be turned into alphabets.

FUTURE SCOPE

- For persons with particular needs, such as the deaf and dumb, having technology that can translate hand sign language to its appropriate alphabet is a key differentiator. The web programme may easily be developed to detect letters other than I, numbers, and other symbols with the addition of gesture recognition. Gesture recognition can also be used to control software and hardware interfaces.

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THANK YOU