

# REAL TIME COMMUNICATION SYSTEM POWERED BY AI FOR SPECIALLY ABLED

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## LITERATURE SURVEY

### Introduction:

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.

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.

| S<br>NO | TITLE | Authors | Abstract | Drawbacks |
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| 1 | Text to speech conversion   | <ul style="list-style-type: none"> <li>• <b>S. Venkateswarlu</b></li> </ul> | <p>The present paper has introduced an innovative, efficient and real-time cost beneficial technique that enables user to hear the contents of text images instead of reading through them. It combines the concept of Optical Character Recognition (OCR) and Text to Speech Synthesizer (TTS) in Raspberry pi. This device consists of two modules, image processing module and voice processing module. The device was developed based on Raspberry Pi v2 with 900 MHz processor speed.</p> | <ul style="list-style-type: none"> <li>• Easy get hacked</li> <li>• Less accurate</li> </ul>                        |
| 2 | Design of the architecture for text recognition and reading in an online assessment applied to visually impaired students | <ul style="list-style-type: none"> <li>• <b>Alex Leon</b></li> </ul>        | <p>This paper describes the architecture for text recognition and reading in an online assessment applied to visually impaired students. For this purpose, it is intended to implementation online evaluation system exclusively to recognize alphanumeric information, i.e., letters and numbers, through the use of an Application Programming Interface or also known as speech and text processing API's, where the computer can understand and respond in natural language</p>            | <ul style="list-style-type: none"> <li>• Operating system Problem.</li> <li>• Chance of misunderstanding</li> </ul> |

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| 3 | Voice source modelling using deep neural networks for statistical parametric speech synthesis | <ul style="list-style-type: none"> <li>• <b>Tuomo Raitio</b></li> </ul>         | <p>A voice source modelling method employing a deep neural network (DNN) to map from acoustic features to the time-domain glottal flow waveform. First, acoustic features and the glottal flow signal are estimated from each frame of the speech database. Pitch-synchronous glottal flow time-domain waveforms are extracted, interpolated to a constant duration, and stored in a codebook. Then, a DNN is trained to map from acoustic features to these duration-normalised glottal waveforms. At synthesis time, acoustic features are generated from a statistical parametric model, and from these, the trained DNN predicts the glottal flow waveform.</p> | <ul style="list-style-type: none"> <li>• High implementation costs.</li> <li>• Noisy environment</li> </ul>               |
| 4 | Voice based Email service for visually challenged people                                      | <ul style="list-style-type: none"> <li>• <b>Gaurav Miglani</b></li> </ul>       | <p>The system will prompt the user with voice commands to perform certain action and the user will respond to the same. The main benefit of this system is that the use of keyboard is completely eliminated, the user will have to respond through voice and mouse click only. Now you must be thinking that how will a blind person will see the correct position on the screen for doing mouse clicks.</p>   | <ul style="list-style-type: none"> <li>• Accents and speech recognition</li> <li>• Time costs and productivity</li> </ul> |
| 5 | Sign Language Translator for Speech-impaired  | <ul style="list-style-type: none"> <li>• <b>Mr. Parthasarathi De</b></li> </ul> | <p>The main objective is to translate sign language to text/speech. The framework provides a helping-hand for speech-impaired to communicate with the rest of the world using sign language. This leads to the elimination of the middle person who generally acts as a medium of translation. This would contain a user-friendly environment for the user by providing speech/text output for a sign gesture input.</p>  | <ul style="list-style-type: none"> <li>• Unclear communication</li> <li>• Lack of accuracy</li> </ul>                     |