

A Survey on Low Cost Hearing Aids based Speech Recognition Technology

¹M. Mounika, ²K.Vasanth

¹PG Scholar of Embedded systems, ²Professor

^{1,2}Department of ECE, Vidya Jyothi Institute of Technology
Aziz Nagar, Chilukur Road, Hyderabad- 75
Macharlamounika85@gmail.com

Abstract: According to the WHO (world health organization) roughly 466 million people are deaf in the world. In this 34 million kids are hearing impaired so, to reduce that disability we develop the low cost hearing system based on the speech recognition technology. Speech popularity is the technique of extracting text transcriptions or a few shapes of which means from the speech input. The proposed technology target function is to get the pure sound which is usable for hard of hearing people.

1. INTRODUCTION

There are many forms of hearing aids with a wide range of functions and features to deal with hard of hearing people. They are virtually small electronic units which make sound louder and make speech easier to pay attention and recognize. It has been designed to pick up sound waves with a microphone, alternate weaker sounds into louder sounds and send them to the ear through a speaker. Speech recognition has its roots in studies carried out at Bell Labs within the early 1950. Early structures were confined to a single speaker and had restrained vocabularies of approximately a dozen phrases. Modern speech recognition systems can apprehend speech from a couple of audio systems and feature large vocabularies in several languages.

The major part of speech recognition is speech only. Speech should to be converted from physical sound to an electrical sign with a microphone and then to digital information with an analog-to-digital converter. Once digitized, numerous models can be used to transcribe the audio to textual content. Most contemporary speech recognition structures rely upon what's called a Hidden Markov Model (HMM). The very last output of the HMM is a series of vectors. A special algorithm is then implemented to decide the maximum probable phrase (or words) that produce the given series of phonemes. Fortunately, a Python programmer is available to put into effect lots of utility in real-time. A number of speech recognition services are available to be used online through an API, and a lot of these services offer Python software development kits.

However from the factor of view of the listening to impaired the obvious use is as a manner of paying attention to what other persons are saying to you and speech recognition technique is aiming to carry deaf and hard of hearing people being back into group conversations with their threaded speech-to-text software that gives people with hearing issues an clean way to live on top of a conversation and conferences.

2. LITERATURE SURVE

The literature survey offers vital records approximately the project. This survey creates the feel and makes us do innovative projects. Literature evaluate offers the basis of recent innovations.

a) Work done:

Dr.B.LATHA, et all [1]. A cellular-based totally sign language translation device for automatic translation of Indian English speech language to signal language. This helps the listening to impaired humans to speak without problems with the hearing humans. D Vijay Krishna Kanth et all [2], This utility is pretty beneficial in lecture rooms and displays. A speech-to-text conversion and show also can improve machine accessibility by using supplying statistics access options for the blind, deaf, or physically handicapped users. Tang Bin, Zhang Liang, et all [3], It enables in minimizing energy intake in the earpiece RF-related with a body unit with DSP based reverberation canceling scheme. For this purpose, a noise cancellation algorithm is developed primarily based on beam-forming method. Nasser kehtarnavaz, et all [4], The recursive wavelet-based method suggests the alternative present ACE strategy utilized in CI. Lower spectral leakage. Isiaka A.Alimi, et all [5], The essential feature of DSP of virtual listening to the resource is noise reduction it is able to reap with the aid of speech enhancement algorithms; improve the device performance and versatility. , David McAlpine, et all [6], Using Four filters to enforce in a longtime version of CI and overall performance in speech intelligibility multiplied. Merlin Revathy S, et all [7], Integrate the noise reduction set of rules with amplification. Increase speech intelligibility. Zhang ting, et all [8], It is an interpersonal conversation it affords the auxiliary conversation tool for deaf humans. Achmad baharuddin, et all [9], Develop the cellular translator shaped due to its simplicity and speech to the written the look at. Fanny Wiryana, et all [10], Different methods are used to speak however anyone had its personal strategies. Mohammed Elmahgiubi, mohammed Ennatar, nabil [11], Data acquisition and manage to translate signal language to deaf-blind humans. Dr.T.Meeradevi, et all [12], This paper describes a way to lessen the barrier of communication by developing an assistive tool for the deaf-mute man or woman. Bhanu P.Sood, Michael G.Pecht, et all [13], It introduces a developed scheme and presents clear and quantitative records on failure instances and failure websites for given implant, precise reliability. Loizou, Michael F, et all [14], Dorman, In this amplifier is used and it connected to headphone via Bluetooth or CI processor via telephone adapter. Kathryn H. Arehart, et all [15], In this paper, an index aimed to expect concord Excellency for people listening through hearing aids. The index is "intrusive "that, it suits the corrupted sign being evaluated to a reference sign and the general precision of the index is remarkable, with a correlation coefficient of 0.970 whilst computed over all of the processing situations and averaged over the mixed agencies of listeners having the ordinary and impaired hearing. Christophe Michey, et all [16], This paper offers the listening to aids development the usage of device gaining knowledge of method clean in clinical clinics. Teodor Sumalan, et all [17], The rapid prototyping makes use of an embedded DSP processor to enhance the best of hearing in schooling field using distinctive processing algorithms. Biyang Yu, Zhe, et all [18], He did a terrific activity on the customer health language use between individuals who are D/deaf and tough of hearing (D/hh), and the general public and the general public did now not use notably extra complicated health texts and health vocabularies than D/hh people. László Czap, et all [19], Worked on online audio transcoding that's useful for deaf people the usage of MySQL and PHP software. Tran Thi Thuy Nga, et all [20], Have been translated the robotic which translates the signal language into text and sound into textual content form for the difficult of hearing humans and deaf people. Ujwalla gawande, et all [21], Did paintings on the dual communicate for deaf and dumb humans the usage of imaginative and prescient-primarily based technique, pores and skin coloring and eigenvectors and values approach become used.

Hiroyasu Horiuchi, Shinsuke Matsumoto, Sachio Saiki, Masahide Nakamura, et al [22], Were expand the multi-version speech visualization and speech help for the deaf people to talk multi-model the social world. Rainer Brueck, et al [23], To offer deaf people (i.e. Deaf, deafened, and difficult of hearing) with auditory cues from environmental sounds distinct assistive devices have been delivered normally for use at domestic. R.Vidhya, S.Vigneshwari, et al [24], Recompense hearing defeat is to work a hearing aid system. Pritam h. patel, et al [25], Accurately introduced the sign language to talk.

b) Advantages:

Mrs.K.REKHA, Dr.B.LATHA , et al [1], Easy communication between disable people. D Vijay Krishna Kanth, et al [2], Accurate STT (speech to text conversion). Tang Bin, Zhang Liang, et al [3], Less noise, less power consumption. Nasser kehtarnavaz, et al [4], lower spectral leakage. Isiaka A.Alimi, et al [5], Flexible, improve speech quality. tiago H.Falk, David McAlpine, et al [6], Less noise. Merlin Revathy S, et al [7], Binaural noise reduction, high performance. Zhang ting, et al [8], More accuracy. Achmad baharuddin, et al [9], Portable, high performance. Fanny Wiryana, et al [10], Very usable for disable people. Nabil, et al [11], Accuracy is 99%. Dr.T.Meeradevi, et al [12], Efficient communication between disable people. Bhanu P.Sood, Michael G.Pecht, et al [13], Reliability good. Loizou, Michael F, et al [14], Easy assistive device. Senior Member, IEEE, and Kathryn H. Arehart, et al [15], improve the listeners music quality in hearing aids. Fred Mustiere, Christophe Michey, et al [16], easy and efficient. Eugen Lupu, Teodor Sumalan, et al [17], Mostly used in education field. Biyang Yu, Zhe, et al [18], deaf people have more possibilities. László Czap, et al [19], helped to deaf children in studies. Tran Thi Thuy Nga, et al [20], good assistance for deaf people. Surbhi Rathí, ujjwala gawande, et al [21], used for dump and deaf people with new technique. Shinsuke Matsumoto, Sachio Saiki, Masahide Nakamura, et al [22], easily communicate one to many communication. Rainer Brueck, et al [23], Warning sounds occurring in road traffic. S.Vigneshwari, et al [24], Using the gain-balancing techniques. Sudeep thepade, pritam h. patel, et al [25], Easy to use.

c) Disadvantages:

I have finished the literature survey and discovered a few risks of the preceding hearing aids are made of varies technologies and techniques. Mrs.K.REKHA, et al [1], Ram Singh Rana, et al [3], Complexity in design. Vanishree, Gopala Krishna, et al [4], Not support the environmental hazards. Stefano cosentino, tiago H.Falk, et al [6], More Complexity And others like greater delay and more algorithms are used, no robustness and many others.

3. CONCLUSION

Use the model of speech recognition based hearing impaired device, lowering the deafness and feels them like ordinary humans. The speech recognition module becomes advanced by the python programming to enhance its packages. Improve consequences accuracy with speech recognition generation with low cost and small in length.

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