

# ***REAL-TIME COMMUNICATION POWERED BY AI FOR SPECIALLY ABLED***

## **ABSTRACT**

Communication with a hearing-impaired individual is a big challenge for a normal person. Hearing-impaired people use hand gesture language (sign language) to communicate with each other, which is not easy to understand by a normal person because he/she is not trained to understand sign language. This communication gap between a hearing-impaired and a normal person created big problem for hearing-impaired individuals during their shopping, hospitalization, at their schools and homes. Especially in case of emergency, it is very difficult to understand the statement of a hearing-impaired one's who uses sign language. In the last few years researchers and developers from all over the world presented different ideas and works to solve this problem but no such solution is available to resolve this issue and can create two-way communication between hearing-impaired and normal persons.

**Keywords---**Communicator; hearing-impaired; Pakistan Sign Language (PSL); hand gesture; special person; token

## **INTRODUCTION**

Deaf person (hearing-impaired) uses hand gestures as a basic language (sign language) for the purpose of communication with normal-hearing persons. Normally it is difficult to understand this sign language for hearing-persons without proper training and it creates a big gap between hearing-impaired and normal-hearing persons. The proposed application is a dual mode application that can be used as an easy and proper communication between them. This duplex system is developed through conversion from the text in simple English into hand gestures and vice versa. However, conversion from hand gestures is available not only in text but also with voice providing more convenience to normal person. Main objective is to facilitate a large population and making special persons, the integral part of the society. The system "communicator" is based on Pakistan Sign Language (PSL). In this application a normal person can enter the text (sentences) in application, after the checking of spelling and grammar, the text is divided into tokens and sub-tokens. A token is a gesture against each word of the text while sub-tokens are the gestures of each character of the words. The combination of tokens created the gestures of text. On the other hand, when gestures were input in to the application, using image processing technique the nature of hand gesture were recognized and converted into corresponding text or voice.

## **LITERATURE SURVEY**

In Pakistan there are number of hearing-impaired institutions where Pakistan sign language uses as a standard language for hearing-impaired persons. Pakistan sign language is a combination of gestures patterns consist of alphabets, words and sentences. Pakistan sign language is based on single and double handed gestures. Pakistan sign language is used for the purpose of communication among hearing-impaired individuals and now it can be used as an interpreter between hearing-impaired and normal hearing persons. The presented work is a dual mode interpreter. It can convert Pakistan sign language into text and for hearing-impaired persons text can be converted into gestures as well. [1]

We had previously seen that are a powerful tool that help users with a visual impairment. Indeed, many apps enable them to remain autonomous. For example, thanks to Seeing Artificial intelligence, visually

impaired people can easily read their mail by placing documents under the smart phone camera. Artificial intelligence technology can apply to any type of disability problem. For instance, people with reduced mobility can control everything at home. [2]

Otter Voice Meeting Notes is an artificial intelligence live transcription and collaboration app for students with learning disabilities announced by Otter.ai. The application removes student's dependency on others by enabling access to the learning environment in a way that's most efficient for them. Otter Voice Meeting Notes transcribes voice to text in real-time and generates rich notes for meetings, in-person, remote, live or pre-recorded conversations or presentation. [3]

The aim of this review is to present primarily the last 10–20 years of behavioral and communicative research on deaf-blind individuals. The review is selective in the sense that we have focused on subject categories such as deaf- blind, Usher and other genetically relevant syndromes, combined with additional terms such as perceptual, cognitive, social .These concepts and terms have guided us in formal searches of databases (i.e. Medline, and Psych INFO) and in the way that we sought to uncover research along the continuum from residual signal processing capacities to communicative and rehabilitative issues. [4]

This study reports on the linguistic abilities of 3 adult deaf-blind subjects. The subjects perceive spoken language through touch, placing a hand on the face of the speaker and monitoring the speaker's articulatory motions, a method of speechreading known as Tadoma. Two of the subjects, deaf-blind since infancy, acquired language and learned to speak through this tactile system; the third subject has used Tadoma since becoming deaf-blind at age 7. Linguistic knowledge and productive language are analyzed, using standardized tests and several tests constructed for this study. The subjects' language abilities prove to be extensive, comparing favorably in many areas with hearing individuals. The results illustrate a relatively minor effect of limited language exposure on eventual language achievement. The results also demonstrate the adequacy of the tactile sense, in these highly trained Tadoma users, for transmitting information about spoken language sufficient to support the development of language and learning to produce speech. [5]

he purpose of this study was to find out whether deafened adults can take advantage of the extra information in speech reading given by the vibration and motional patterns picked up by placing a hand on a speaker's throat and shoulder, and how valuable this tactile supplement is as a support system for speech reading. We have named this method--speech reading with tactile supplement--tact ling. Eight deafened adults participated in the study, conducted with a pre-test/post-test control group design. The experimental and the control groups took speech reading classes together. The experimental group received additional individual training in tact ling during six 1 h lessons. Both the experimental and the control groups were tested, before and after training, first by a familiar person and thereafter by an unfamiliar person. The results demonstrated two significant main effects. Tact ling is generally better than speech reading alone, and the results from the test given by the familiar speaker are better than with the unfamiliar speaker. [6]

## **FEATURES OF EXISTING SYSTEM**

1. October is National Disability and Employment Awareness Month. During the entire month, numerous organizations and advocacy groups throughout the United States hold events to promote and educate employers about hiring of people with disabilities.
2. Due the barriers we face, disabled people develop problem-solving skills.
3. Innovation and creativity. Most disabled people face barriers which get in the way of doing things.
4. While co-ordination support for early intervention and the return to work planning process. By doing so, the employer is able to streamline disability benefits, manage absenteeism and ensure that services are provided to employees in the most efficient and cost-effective manner with the goal to minimize barriers to recovery.
5. As Calkins et al. (2000) noted, "Cost savings are greater when IDM program components are fully integrated" of the disabled.
6. Helps us recognize barriers that make life harder for disabled people.

## **CHALLENGES OF EXISTING SYSTEM**

1. Inaccessible work places, discrimination and negative attitudes.
2. The medical model looks at what is 'wrong' with the person, not what the person needs. It creates low expectations and leads to people losing independence, choice and control in their lives
3. That it essentially further disables someone who is already disabled, by not properly identifying the disability.
4. People with disabilities have more difficulty accessing health care providers with appropriate skills and are more vulnerable to secondary health conditions and premature death.
5. Person with Disabilities often have lower education accomplishments, poorer health conditions, higher poverty rates and less economic engagement than people without disabilities.

## **CONCLUSION**

From an international perspective, the population of deaf-blind has received little research attention. The research on the deaf-blind can be characterized by heterogeneity in subject population, methodology and scientific ambition. This typically manifests itself in case studies, whether it concerns research on communication methods or behavior modification studies. There exist larger studies, but then they are typically descriptive and not causally oriented. One important general constraint is the type of deaf-blindness under scrutiny. In principle, one can separate three classes of deaf-blind individuals congenitally deaf-blind (including a variety of syndromes), Usher (congenitally deaf, becoming blind) and adventitiously deaf and blind adults.

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