A TEACHING SYSTEM FOR NON-DISABLED PEOPLE WHO COMMUNICATE WITH DEAFBLIND PEOPLE

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ABSTRACT

The World Health Organization (WHO) states that 15 percent of world population are with disabilities. Deafblindness is a combination of vision and hearing impairments. There are a few people who are completely deaf and blind. Our world is organised around hearing sighted people, and this can present many challenges to a deafblind person. If you have little or no sight and hearing, learning to communicate, to make yourself understood, or hear other people speaking is very difficult and can be isolating. In a crowded room a sighted hearing person sees who is talking to them and hears what they are saying. A deaf person may use their vision to lip read what others are saying. But if they lose their sight as well, how will they know someone is trying to communicate. We all depend on information and feedback means, about what is going on around us. This is difficult for deafblind people to access if they don’t get the right support.

Keywords: Deafblind, Finger Braille.

1. INTRODUCTION

There are many ways of communicating with a deaf-blind person. Most deaf-blind people have some usable vision or hearing. Because a deaf-blind person can't compensate for the loss of one sense with the other, even a partial loss of both senses can be considered deaf-blind. So a "deaf-blind" person might be totally blind and hard of hearing, totally deaf and partially sighted, or may be close to totally blind and close to totally deaf but have some usable vision and hearing. Generally people that are only a bit vision- and hearing-impaired are referred to as vision-impaired/hard-of-hearing. But for someone who is totally one and partially the other, it's not uncommon to be considered deaf-blind. Because of the wider definition of deaf-blindness, some deaf-blind people can use auditory or visual ways to communicate, but just need these ways to be modified for their poor vision or hearing. A good number of deaf-blind people can use some vision or hearing in some situations but are functionally totally deaf-blind in other situations [1]. Some deaf-blind people are truly completely deaf and completely blind and therefore can only use tactile methods of communication in all situations.
Deafblind people use many different communication media according to the age of onset and what resources are available to them. “Yubi-Tenji” or Finger Braille is one of tactual communication media of deafblind people (Fig. 1).

Recently, some Braille input devices were developed [4]. These devices let deafblind person wear gloves or an keyboard to input their Finger Braille and actuators to output non-disabled person’s speech converted to Finger Braille. In such supporting devices, deafblind person is burdened with wearing the sensors and the actuators, and must master new communication system with the supporting devices.

Objective of this project is development of a Finger Braille supporting device which represents skin contact communication, since skin contact is only a non-verbal communication for deafblind person.

II. FINGER BRAILLE SUPPORTING DEVICE

Fig. 2 shows the concept of the Finger Braille supporting device. The main feature of this project is that deafblind person and non-disabled person who are non-skilled in Finger Braille can communicate by usual Finger Braille [2].

This supporting device includes two assistive systems; one is a Teaching System, the other is a Recognition System. The Teaching System recognizes non-disabled people’s speech and displays the dot pattern of Finger Braille [5]. Thus deafblind person don’t have to aware of the supporting device and may communicate by usual Finger Braille without interpreters. This employs communication through skin contact. Deafblind person who are skilled in Finger Braille can catch up with speech conversation and express various emotions, because of prosody of Finger Braille [1]. Because there are small non-disabled people who are skilled in Finger Braille, deafblind people communicate only with interpreters. Thus the participation of deafblind people is greatly restricted.

III. POTENTIAL FUTURE SYSTEM

Block diagram for the system is shown in Fig.3. Normal user can communicate with the deafblind user using this teaching system. Normal user will give text input data or voice input data to PC. Software loaded in PC will convert this input data to Braille code. Microcontroller will control the keys of Braille typewriter and hence deafblind user will understand the data.
Fig. 2 Finger Braille Supporting Device

Aims to deploy:
- System which is more efficient, reliable and effective.
- It is easy to configure and setup teaching system and is secured.
- To overcome the limitations of existing systems.
- To build a simple teaching system for deafblind people.
- To implement teaching system so that both deafblind person and non-disabled person unskilled in Finger Braille can communicate using conventional Finger Braille.

Fig. 3 Proposed System Block Diagram
IV. SYSTEM ALGORITHM

For the development of system flowchart shown in Fig. 4 is used. It is a teaching system for a person who communicate with deafblind person. When non-disabled person wants to communicate with deafblind person, he will give text/speech, this text/speech input will get converted into Braille code through software loaded in PC. Because the sender must keep on touching fingers of the receiver, speech recognition is suitable for input interface. First, the Teaching System created and loaded dictation grammar of SAPI5.1, and then SAPI5.1 was ready to recognition. When a sender spoke into a microphone, SAPI5.1 attempted to recognize it. Following successful speech recognition, the Teaching System retrieved results of speech recognition. Sender could train SAPI5.1 by a speech training wizard. After the speech training, speech recognition engine could perform better and improve SAPI’s personalization experience. According to Braille code microcontroller will move dots of the Braille typewriter and hence deafblind person will understand the data.

Fig. 4 Flowchart of system
V. CONCLUSION

Both deafblind person and non-disabled person unskilled in Finger Braille can communicate using conventional Finger Braille. It is a finger Braille teaching method for people who communicate with deafblind people. The nondisabled subjects could change the dotting durations and finger load by the teaching methods. For future work, number of output modules can be provided to deafblind people, so this teaching system will be used by number of deafblind people at a time.

REFERENCES