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Communication Device to Detect Impaired Person Using Vivo

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Abstract-This paper aims to build a handheld device that would help Speech and hearing impaired people to communicate with others in every day spoken language such as English. Those people must depend on science and technology to innovate a solution to make them live a better life. Although people have previously worked on projects involving sign language translating devices such as gesture sensing gloves, it is difficult to represent all the words of a plain language like English into a sign language symbol. So we propose a new form of communication mechanism that aims to eliminate these drawbacks with the help of the latest technologies available.This project divided into two modules. First, text to Voice translating module which involves touch-screen based text recognition using 65K Color Touch-screen TFT Display. Another is Speech to Image Translating module which involves new form of Speech Recognition unit and a color display. The device is designed and developed around a low power and high performance 32-bit LPC1313, an ARM Cortex-M3 microcontroller from NxP Semiconductors. It can be used Touchscreen sign method eliminates the use of complex hand sign language.

Keywords- Color TFT LCD Display, MicroSD Memory Card, Head phone/Speaker, Color TFT LCD Display, Touch Screen Controller, Blue tooth communication, ARM processor.

I. INTRODUCTION

Nowadays, we see there are millions of people who suffer from hearing loss (deaf) and speech loss (dumb) that might have occurred since birth or at a later stage during their lifetime. Deaf and dumb people suffer; this cannot be cured by medicines because they are not some disease caused by some virus. Speech and hearing impaired people often communicate to normal people via sign language such as kind of representation of words through hand and finger positions. But it has limitations because it is not easy to understand by normal human beings, not many in the world know sign language at all. Automatic speech recognition (ASR) can provide a rapid means of controlling electronic assistive technology. ASR systems function poorly for users with severe speech impairment because of the increased variability of their articulations individual users balance the increased speed and ease of use of the speech-controlled system against the increased frustration arising from lower accuracy [1]. We present a battery of measures of consistency and confusability, based on mathematical forced-alignment, which can be used to predict recognizer performance. Intelligibility assessments are normally based on listening tests and are notoriously complex and time consuming to conduct and psychometrically weak, having poor reliability and validity[2]. Which are trained to relate speech acoustics to chosen positions on a two-dimensional display. The following section discusses the STARDUST application as an ASR problem Speech consistency does not same

as speech intelligibility but may be expected to be related to it.[3].The main effects appears to be from the resultant constraint that certain states must be present for some minimum duration.[4]. The three conditions were: repetition of written sign words, visual feedback, and anvoice signal followed by visual feedback. For eight participants with speech impairment, the ability to alter speech production was shown here, together with a differential effect of the three conditions. Copying an audit signal gave significantly better recognition scores than just repeating the same voice signal. Visual feedback was no more effective than repetition same voice signal. Whilenonspecific feedback alerts the participant to how much the pronunciation needs to change on the next trial, but does not indicate how to do this [5]. The paper describes the development of a voice-input voice-output communication aid (VIVOCA) for people with disordered speech that means unnormal human being speech initially concentrating on people with severe speech impairment. The VIVOCA is intended to recognize and interpret an individual's disordered speech and speak out an equivalent message in clear synthesized speech. A VIVOCA prototype, designed according to user requirements, has now been produced and is being trailed by users in order to optimize the design prior to a larger trial[6].Voices built using the FestVox process may be compiled into efficient representations that can be linked against Flite to produce complete text-to speech synthesizers. This paper it improves the speed and reduces the hardware size also. There are still requests for smaller footprints especially with respect to RAM requirements as battery power for RAM version is expensive and some embedded systems have as little as 2Kbytes of memory, and if we wish to deliver speech synthesis in games, toys etc.[7].

II. RELATED WORKS

It is concluded that a speech-controlled ECS are a viable alternative to switch-scanning systems for some people with severe speech impairment and would lead, in many cases, to severe efficient control of the home [1].Then the After training a CDHMM recognizer, it is necessary to predict its likely performance without using an independent test set, so that unclear words can be replaced by alternatives. [2]. Visual feedback was no more effective than repeating word mechanism. For fourcontrol participants, visual feedback had produced significantly better recognition scores than just repetition of voice signal words and the presence of an auditory model was significantly more effective than visual feedback [3]. .This paper describes the results of our experiments in building speaker-adaptive recognizers for talkers with spastic speech impairment [5]. The VIVOCA is intended to recognize and interpret an individual's disordered speech and speak out an equivalent message in clear synthesized speech. [6] Flite is a small, fast run-time synthesis library suitable for embedded systems and servers. Flite is designed as a run-time synthesis platform for Festival in applications where speed and size are important. [7]

III. EXISTING SYSTEM

Although people have previously worked on projects involving sign language translating devices such as hand shaking language, these are anything but correct solution because the sign language produced serious drawbacks mentioned above [6].The VIVOCA is intended to recognize and interpret an individual's disordered speech and speak out an equivalent message in clear synthesized speech. User conference suggests that such a device would be acceptable and would be useful in communication situations where speed and intelligibility are crucial. Speech recognition and synthesis techniques build on previously successful development of speech-based home controlinterfaces, and various methods for speech 'translation' have been evaluated.

IV. PROPOSED SYSTEM

In this proposed method to increase reliability and validity. More advanced user can use word translation .By using this method we can communicate in normal person to Speech and hearing impaired people. In these proposed two methods are used for the smart class room communication for Speech and hearing impaired peoples. It should have the 32 bit processor means speed increased.A 32-bit lpc1313, an arm cortex-m3 microcontroller from NXP semiconductors .It can have the capability of arm cortex-m3 processor, running at the same frequencies. ARM CORTEX-M3 built-in Nested Vectored Interrupt Controller (NVIC).32 kb (LPC1313) on-chip flash programming memory.8 kb (LPC1313) SRAM.in-system programming (ISP) and In-Application Programming (IAP) via on-chip boot loader software. Processor wake-up from Deep-sleep mode via a dedicated start logic using up to 40 pins. Each peripheral device has one interrupt line connected to the NVIC but may have produce several interrupt flags. Individual interrupt flags may alsorepresent more than one interrupt source.

4.1. Block Diagram

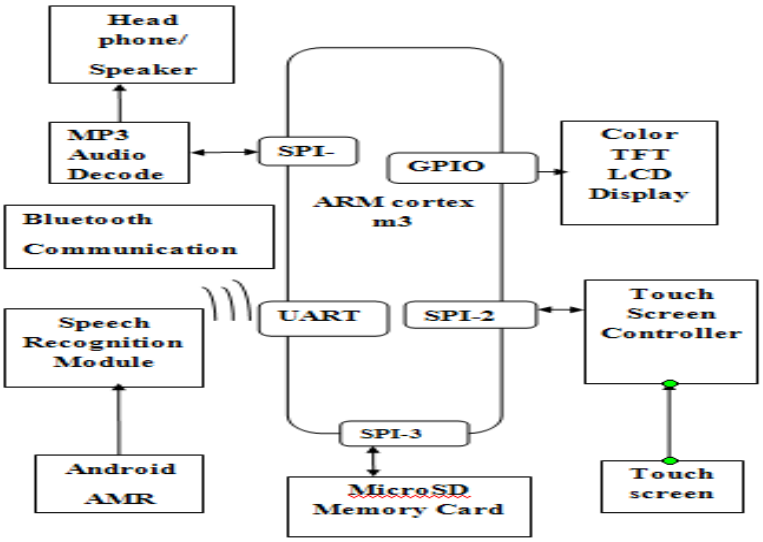

Figure 1. VIVO functional blocks

In the first process is to understand and decode the swipe gesture made on the touch screen and then to speak out this word/alphabet/numeral in a virtual human voice through an MP3 audio decoder. The deaf and dumb people will be able to form normal synthetic sentences using this process naturally very quickly and easily. The color display method should help this process by rendering an onscreen swipe keypad layout for the user to input their Text. Then the second process speech has been recognized by the Speech Recognition Module (Android AMR) it can convert speech into corresponding binary value or the text value. Then the text value had been send via blue tooth in the intelligent device (ARM processor).The pre-defined information can be written in the program. It can be compare the text value of speech and stored sign language. Then the same text value means predefined stored images (Micro SD Memory Card) have been generate.

4.2. Touch Screen

A touch screen is an electronic visual display that the user can control through simple or multi-touch hand signs by touching the screen with one or more hand fingers. Some touch screens can also detect visual signals or video signals. The user can use the touch screen to react to what is displayed and to

control how it is displayed (for example by zooming the text size).The touch screen enables the deaf and dumb people to interact directly with what is displayed, rather than using any one of the keypad device, or any other intermediate device. Touch screens are common in devices such asplaying game consoles, computers, tablet computers, and phones. They can also be attached to computers or as terminals to networks. They also play a prominent role in the design of digital appliances such as personal digital assistants (PDAs), satellite navigation devices, mobile phones.

The popularity of smart phones, tablets, and many types of information appliances is driving the demand and acceptance of common touch screens for portable and functional electronics. Touch screens are found in the medical field and industry, as well as for automated teller machines (ATMs).

4.3 Memory Card

A memory card is an electronic flash memory data storage device used for storing digital signal. They are commonly used in many electronic devices, such as smart mobile phones, laptop systems, MP3 audio systems and video game modules. They are small, re-recordable such as re-producible, and able to retain data without power.

4.4 MP3 Decoder

Decoding, on the other hand, is carefully defined in the standard. Most decoders are bit converter which means that the decompressed output that they produce from a given MP3 file such as binary value will be the same, within a specified degree of roundedvalue of the tolerance such as original binary value, as the output specified mathematically in the ISO/IEC high standard document. Therefore, comparison of decoders is usually based on how computationally.

4.5. Color TFT LCD display

A thin-film-transistor liquid-crystal display (TFT LCD) is a variant of a liquid-crystal display (LCD) that uses thin-film transistor (TFT) technology to improve image qualities such as addressability and contrast. A TFT LCD is an active-matrixtype of LCD, in contrast to passive-matrixtype of LCDs or simple, direct-driven LCDs with a small segments.TFT LCDs are used in appliances including color television sets, PC systems, smartmobiles, handheld video game systems, personal digital assistantsdevice, navigation systems and projectors

4.6 Proposed Project Features

- Deaf and dumb people can communicate to the normal human beings.
- Touchscreen gesture method eliminates the use of complex hand gestures.
- Hence it also removes thefingering sensing systems which are the methods large, complex, expensive and slower.
- Support for uneducated people with Image translation feature.
- More advanced deaf and dumb people can use word translation.
- Large on chip memory to store image and voice files.
- High quality voice signal generation with the audio decoder module.

V. RESULTS AND DISCUSSION

5.1 Simulation Environment

Programming Language	Embedded C
Development Tool	LPCXpressoIDE(Eclipse based)
Protocols Used	I2C, SPI, UART
Programmer	Flash magic

5.2 .Hardware Output

The hardware shows the interfacing of the ARM processor and Touch screen device interface.

Figure 2. Hardware shows interfacing

VI. CONCLUSION

This work describes the communication between the normal person to Speech and hearing impaired people for smart class room.Gesture to voice process was completed. Voice to image and Voice to text module and also SMS handling module will process.

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