

AN ELECTRONIC DEVICE FOR PHYSICALLY DISABLED PEOPLE

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Abstract - Blindness and Dumb is an obstacle that is not even comprehensible for the non-blind. Many day-to-day activities may become challenging, complicated and may require much more labor for those with eye-sight and lacking of ability in speak problems. One of the major problems they face is understanding visual or text information and delivery of information. A blind cannot read any of the handwritten documents and dumb people also lack in delivery of proper content. This is the fundamental issue that deal with, and try to solve, with a new piece of technology, which is essentially an automated text (typing and scan image)-to-audio. According to this keynote concept, any piece of text that a person would like to read/understand is converted to an audio signal. This audio signal is delivery by using speakers. This instrument is advance function of software by using a coding for convert text to speech. Definitely be a empowering force in a blind and dump person's life, and can be helpful in relieving them of their frustration of not being able to read whatever they want, thus making their life easier.

Keywords — Blindness, Dump, electronic interface, image capturing, image recognition, text to audio conversion, Dot net, electronic hearing assistance.

I.INTRODUCTION

Understanding and reading is one of the main problems encountered by visually impaired and dumb persons in their daily life. Over decades, these peoples were using someone has to read it for them and sign language. Consequently, this impediment affects nearly all activities of the visually disabled and dumb. However, in spite of long lasting research record, the world of print information a newspaper, books, signs, menus, handwritten text remains largely inaccessible to blind people. Also dumb people are facing difficult while deliver thecontent because the sign language is not easy to understand. The person needs to spend more days to learn the language. This paper will seek answer to this pressing problem by developing an assistive technology.

II.COMMERCIAL VIABILITY

This type of technology has not been implemented before. There are just mechanical reading aids like Braille and for a dumb people of using sign language so that it difficult for them to passive readers and delivery of proper content others are yet to be implemented and based on the applications of the OCR/ICR and the speech synthesizer technology, but this paper has been designed in advance of using the coding function as like java. Although there are various technology available to the blind community to help them navigate, they all limit the freedom of the user or too expensive. The main drawback in all these is that any handwritten text cannot be read. We have more handwritten documents than printed documents, which are more wide spread than the latter. The whole point of them knowing the content of the document will be nullified. In order to overcome all these disadvantages, we are essentially developing this automated device that enables the blind to read printed documents easily and without any high risk at very low affordable costs for all people. Though major developments have been made focusing on a particular technology, the focus towards the integrated systems and other combinational systems is relatively less.

III. ASSITIVE TECHNOLOGY

This is about an automated device which will assist the lives of the blind and dumb. This device helps them with the non-digitized printed documents or any handwritten documents. This device consists of a camera, which is used to capture the image of the document to be read. This if consists of any low level image; however it is then given to various images processing algorithms or coding in order to increase its overall efficiency.

Page alignment process can be done depending upon the output of the image. This image file or typing information is give as the input to software coding java which is used to convert the captured image into corresponding text. It actually works by extracting the text structured letter from it.

Then it performs the normal functionality of character dictionary recognition. This output of java coding will be in Doc document which is then given to “text to speech/audio converter” which converts the text into required speech by using the table which is stored in the Cache memory. The Micro controller is used as the interface between all different software and hardware. It is also used to control the speaker output ear device which enables hearing of the stored text. They can access that information through sharing the device. This is the fundamental issue that deal with real time based system products. This would prove to be cost effective and easily help the poor with their results and dreams.

IV.COMPONENTS USED

A. Camera:

A small camera and keypad attached to the device acts the input source. For effective and clear images, “pin hole” cameras are used. The reason for pin hole camera chosen is for their smaller size, conceal ability and lower costs and they provide decent image resolution. They provide a wide range of specifications. The Orb Micro Spy Camera with built in DVR is a miniature surveillance video & audio recording camera concealed into a tiny ball.



Fig 2: Camera image used in the system

B. Text to speech synthesizer:

This is the most important component of the whole device as only through this the user gets the output of audio. Speech synthesis is the artificial production of human speech. A computer system used for this purpose is called a speech synthesizer, and can be implemented in software or hardware. A text-to-speech (TTS) system converts normal language text into speech. A synthesizer can incorporate a model of the vocal tract and other human voice characteristics to create a completely "synthetic" voice output. An intelligible text-to-speech program allows people with visual impairments or reading disabilities to listen the written work on the home computer. The Software provides high converting speed and economy of hard disk space. Text content speaker can be used to read the documents aloud with a very clear and natural sounding voice. For an text to speech conversion by using the software coding like java which is more advance then the software of OCR/IWR because in this software the blur image are not easy to convert into an speech. By using this coding it is possible, of converting blur text to speech.

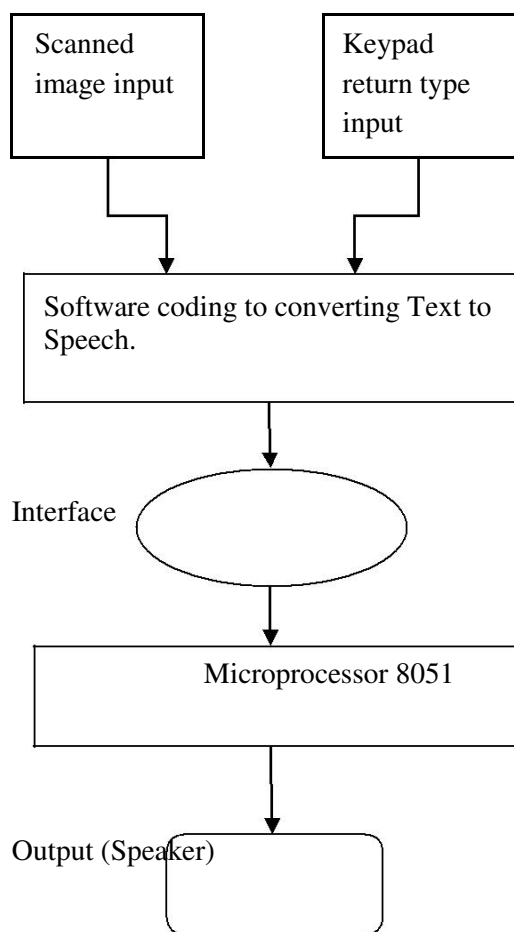


Fig 1: Flow Diagram

V. WORKING

The basic concept on which the whole process revolves is of capturing the text, recognizing it and plays it. There are many ways of implementation. A device form is chosen for its portability and is built around cost effective components. The camera firstly captures text as an image. Next the captured image undergoes processing coding for enhancement. Color corrections coding such as brightness and contrast adjustments or Interpolation, Image restoration are used. After all this is done, the image is now processed by the traverse so text into speech by coding. This is again a part of the image processing, but processes for textual contents in an image. If the document is a hand written one, then the algorithm matches its own pattern with the cursive writing strokes of the hand written document. This is mainly used as most of documents are handwritten than in printed form. The coding has its algorithm by which it compares and traces the word. Which reads the context of the sentence and predicts the missing letter according to it is used for better results. Once the text has been fully recognized it comes in few file formats. They come in Pdf, doc, docx. The generated text is then processed by the Micro Controller. This is used to control all the relative process with different hardware and the software. Text to Voice Converter Software converts word documents into audio file. The recorded PDF, word or any other text files are converted to speech automatically. Reading and Converting is performed directly without any temporary files. The text file obtained from the computer is then given to Speech synthesizer software. The Speech synthesizer software used can be programmed for different voice modulation and different languages. They are used to convert the input text files into voiced speech which is now stored in the memory. The stored speech is now processed by the micro controller. The

speech should be comprehensible. This is now sent to the speakers. The speakers is now used to transmit the speech signal over a distance. It should be sure that they are sent within a frequency range of the speaker and mainly they don't accompany any noise signals. The transmission takes place from the transmitter to the receiver that is placed on the blind person's ear. This speech signal is now heard by the user. This device can be configured to send this same speech signal to all the different devices. The main aspect of all this is to have it inside a small device. The batteries used for this are the Lithium batteries. They are easily rechargeable and occupy less space. This device is very much portable. The camera can be placed at the tip. The micro controller can be placed at the interfaces of the computer and the speech synthesizer software. The batteries can be replaced alternatively by opening the device.

VI. RESULTS AND DISCUSSION

The technology output is audio and it is happen by using the hardware and software dot net coding. The input is about three types of images like a blear image, normal image and keyboard typing image everything are in the form of word, pdf documents so it is send to the dot net coding then it converting the each text line into an speech as an audio signal. Then the audio signal is send to the hardware through the interface device and to the output speakers which is very useful for the blind people to hear the sounds.

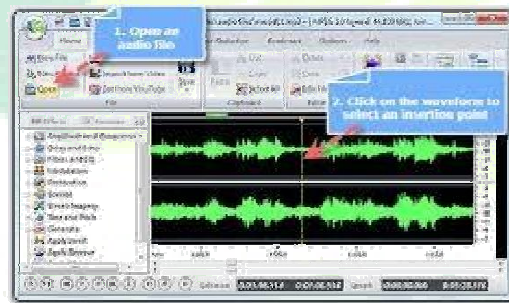


Fig3: Result image of speech signal

And for the dumb people sign language is not that much useful for the normal people to understand, so that the keyboard is very useful for the people to get all the things in the form of audios. By using this typing word are converted into an audio signal to hear by others.

VII.CONCLUSION AND FUTURE WORK

Technology is a light that cuts through darkness and touches lives. The development of a reading and delivery aid is a significant step forward in enhancing a blind and dumb person's access to any sort of print information. This coupled along with the low cost technology available come together in building a system that greatly reduces the need for dependency on others among the blind and dumb. Its practical application is also further vindicated by the

ability to read hand written documents as well. The method proposed, an automated device is a lightweight and portable means of equipping the visually impaired with this aid. Since this works in a real time environment and also involves fairly simple logic, it has immense potential.

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