PORTABLE CAMERA-BASED ASSISTIVE TEXT AND PRODUCT LABEL READING FROM HAND-HELD OBJECTS FOR BLINDPERSONS

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I. ABSTRACT

A camera-based assistive text reading framework to help blind persons to read text labels from hand-held objects in their day to day lives. In this paper Camera acts as main vision to capture the image of product packaging and hand held objects. This paper proposes a system which is used for converting the input string of text into the corresponding speech using Raspberry-pi. The fastest and effective way of communication is language. Limited and proper combination of words with grammar rules gives a clear picture of the ideas or thoughts that speaker wants to convey. The system includes Python coding which is done on Raspberry-pi for the generation of speech signal based on the user defined input text. Text-to-Speech is a device that scans and reads English alphabets and numbers that are in the image using Optical Character Recognition (OCR) technique and changing it to voices. This paper describes the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module. The device was developed based on Raspberry Pi.

II. INTRODUCTION

The Text to speech synthesis (TTS) system is a system which converts any given text as an input into the sound as an output. A text to speech (TTS) synthesizer is a computer based system that read text aloud automatically, regardless of whether the test is introduced the system that can read text aloud automatically, regardless of whether the is introduced by a computer input stream or a scanned input submitted to implemented by both hardware and software. Speech is often based concatenation of natural speech ie. Units that are taken from natural speech altogether to form a word or sentence. Many researchers have developed number of TTS system for foreign languages but from the previous literature it was realized that less work has been done in text to speech. A system which is used for text to speech synthesis is called

speech synthesizer. Text to speech is a system which is based on the automatic generation of the new sentences or words. This is a method where a computer is made to speak. As the paper discusses about text to speech conversion speech synthesis comes into frame. Speech synthesis is a artificial or computer generated human speech. A system which is used for this purpose is called speech synthesizer. A rule based text-to-speech synthesis system was developed for the language of Malaysia known as Malay. First perform text processing, including "letter-to-sound" conversion, to generate the phonetic transcription. When Text-to-Speech mode is selected, the user has to input text using the text input box or a text file. The text is processed and the resulting speech is produced. The quality of a speech synthesizer is judged by its similarity to the human voice and by its ability to be understood. A text-to-speech synthesizer allows people with visual impairments and reading disabilities to listen to written works on a home computer. Many computer operating systems have included speech synthesizers. 'Speech synthesis' also called 'Text to 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. A text-to-speech (TTS) system converts text to speech
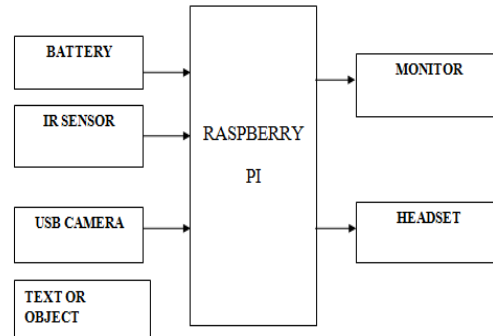
III.   BLOCK DIAGRAM

Fig: 3.1 System block diagram

System Overview

BATTERY: A battery is a device that can store electricity. Some are rechargeable, and some are not. They store direct current (DC) electricity. A battery really means two or more wet or dry cells connected in series for more voltage, or in parallel for more current, although people often call a cell a battery. AA, AAA, C, and D batteries all have 1.5 volts. The voltage of a cell depends on the chemicals used while the amount of power or current it can supply also depends on how large the cell is; a bigger cell of a given type can supply more amps, or for a longer time

Microcontroller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up

resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

Monitor:

This section is basically meant to show up the status of the project. This project makes use of Monitoring for necessary information.

IR Sensor:

The IR LED is used as the IR transmitter, which is connected by using the resistor logic as shown in the schematic. The IR receiver is connected by using the transistor logic whose collector is connected to the base of the transistor. The base of the transistor is connected to the photo diode through the resistor.

Camera:

A camera is an optical instrument for recording or capturing images, which may be stored locally, transmitted to another location, or both. The images may be individual still photographs or sequences of images constituting videos or movies. The camera is a remote sensing device as it senses subjects without any contact.

IV.   RESULTS:
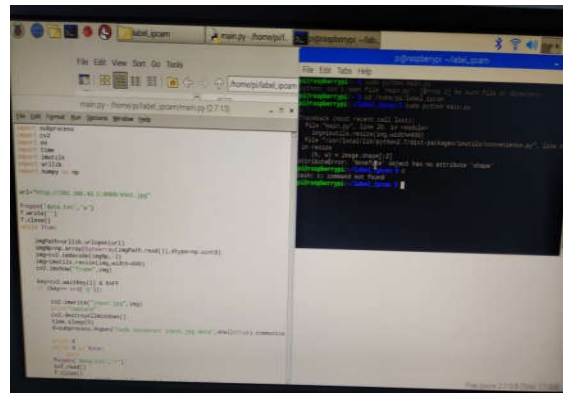

Fig (4.1) Hardware arrangement

Fig (4.2) Raspberry pi Program on pc

Fig (4.3) Headset connected to the
Raspberry pi

Fig (4.4) output on pc

V.   CONCLUSION

Text to speech (TTS) system was designed in order to produce an equivalent acoustic signal which goes in synchronization with the text which is provided as an input to the Raspberry-Pi system. By implemented this system visually impaired can easily listen whatever they want to listen. And with the help of the translation tools he can convert the text to the desired language and then again by using the Google speech recognition tool he can convert that changed text into voice. By that they can be independent. And it is less cost compared to other implementations.

VI.   REFFERENCES

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