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RFID BASED MATERIAL TRACKING AND VOICE BANK SYSTEM FOR BLIND PEOPLE

[1] U.Vijay Shankar, S.Dhanalakshmi [2], S.Jayasri [3], R.Kowsalya [4], A.Lincypriya [5]

Abstract- *We propose a RFID based assistive material reading frame work to help blind persons and product packaging from hand-held object in their daily lives. RFID based material reading through unique bar code system. The proof of concept prototype is also evaluated on a dataset collected using ten blind persons to evaluated the effectiveness of the systems hardware. The recognized text codes are output to blind users in speech. Reading is obviously essential in today's society. Printed text is everywhere in the from of reports, receipts, bank statements, restaurant menus, classrooms handouts, product packages, instructions on medicine bottles, etc.,*

KEY WORDS: Assistive device, blindness, RFID, UART

1. INTRODUCTION

This project each person has the RFID reader before enter into the shopping mall. After enter the shopping mall the people should know the which product begin us using RFID reader and voice bank IC. The RFID can read the product name and also the study of this project describes about the application of RFID in daily lives uses of blind people. The main study of the project is to the blind people will going to the purchasing, they can easily identify the what is the product or any other things are begin them. In display the data. The audio jack port is attached to processor, it can convert the voice signal to the blind people.

The technology which enables the electronics labeling and wireless identification of object using radio frequency communications. RFID is also a subset of the broader area of automatic identification and data capture technologies .RFID is an application of object connected data carrier technology with attributes that are complimentary to other machine-readable data carrier technologies.

1.1 Objective

The blind peoples are not able to identify the product and product name. we propose a RFID based assistive reading frame work to help the blind people to know the product through voice, to improve the performance of blind people. The ability of the people who are blind or have significant visual important to read printed labels and product packages will enhance independent living foster economic and social self-sufficiency. Today there are already a few systems that have same promise for portable use, but they cannot handle product labeling. But a big limitation that it is very hard for blind users to find the position of the barcode and to correcting point the barcode reader at the bar code.

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1.2 System analysis

Camera based technology was used in the existing project. In this prototype a camera is attached to the pair of sunglasses. The frame work consist of three functional components: scene capture, data processing and audio output. Atmel 89c51 microcontroller was used. In this method camera based assistive text reading frame work to help the blind persons read text labels and product packaging from hand-held object in their daily lives. To isolate the object from cluttered backgrounds or other surrounding objects in the camera view, first provide an efficiency and effective motion based method to define a region of interest in the video by asking the users to shack the objects. This method extract moving object region by a mixture-of-Gaussians-based background sub-tracking method. In the extracted ROI, text localization and recognition are conducted to acquired text information. To automatically localize the text region from the object ROI, it improves the novel text algorithm by learning gradient features of strokes orientation and distributions of edge pixels in an ad boost model. Text characters in the localized text region are then binaries and recognition software. The recognized text codes are output to blind users in speech.

We propose a RFID based label reader to help the blind persons to read the name of the label on the product and also identify the product name and pronounced through voice. Blind people have the ear phones. AUDUINO UNO microcontroller is used in the data processing. Radio frequency identification or RFID is the fastest growing technology in the world today. RFID is an automatic identification method that can remotely retrieve data using devices called RFID tags or transponders. RFID in wireless communication was evolved to the grate advancement of wireless technology. This introduction of RFID into the mobile communication fields has made the world a smaller place to live in.

2. RFID TECHNOLOGY

RFID is the wireless use of electro magnetic fields to transfer data, for the purpose of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information.Radio frequency identification (RFID) is one method for automatic identification and data capture (AIDC). RFID readers can simultaneously scan and also identify the hundreds of tag items. Visually impaired people may benefit from RFID based applications that support users in maintaining “spatial orientation ” through provision of information on where they are , and description of what lies in their surroundings. The term RFID is used to describe various technologies that use radio waves to automatically identify people or objects. RFID technology is similar to the bar code identification systems we see in retail stores every day. However one big difference between RFID and bar

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code technology is that RFID does not rely on the line-of-sight reading that bar code scanning requires to work. A radio-frequency identification system uses tags, or labels attached to the objects to be identified. Two-way radio transmitter-receivers called interrogators or readers send a signal to the tag and read its response. RFID tags contain at least two parts: an integrated circuit for storing and processing information, modulating and demodulating a radio-frequency(RF) signal, collecting DC power from the incident reader signal, and other specialized functions; and an antenna for receiving and transmitting the signal. The tag information is stored in a non-volatile memory. The RFID tag includes either fixed or programmable logic for processing the transmission and sensor data, respectively. RFID systems can be classified by the type of tag and reader. A PassiveReaderActiveTag (PRAT) system has a passive reader which only receives radio signals from active tags (battery operated, transmit only). The reception range of a PRAT system reader can be adjusted from 1–2,000 feet (0–600 m), allowing flexibility in applications such as asset protection and supervision.

An ActiveReader Passive Tag (ARPT) system has an active reader, which transmits interrogator signals and also receives authentication replies from passive tags.

2.1 CHARACTERISTICS OF RFID

Table-1:RFID FREQUECY BANDS

BAND	REGULATIONS	RANGE	DATA SPEED
120–150 kHz (LF)	Unregulated	10 cm	Low
13.56 MHz (HF)	ISM band worldwide	10 cm - 1 m	Low to moderate
433 MHz (UHF)	Short Range Devices	1–100 m	Moderate
865-868 MHz (Europe) 902-928 MHz (North America) UHF	ISM band	1–12 m	Moderate to high
2450-5800 MHz (microwave)	ISM band	1–2 m	High
3.1–10 GHz (microwave)	Ultra wide band	to 200 m	High

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An ActiveReader Passive Tag (ARPT) system has an active reader, which transmits interrogator signals and also receives authentication replies from passive tags. An electronic product code (EPC) is one common type of data stored in a tag. When written into the tag by an RFID printer, the tag contains a 96-bit string of data. The first eight bits are a header which identifies the version of the protocol. The next 28 bits identify the organization that manages the data for this tag; the organization number is assigned by the EPC Global consortium. The next 24 bits are an object class, identifying the kind of product; the last 36 bits are a unique serial number for a particular

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tag. These last two fields are set by the organization that issued the tag. Rather like a URL, the total electronic product code number can be used as a key into a global database to uniquely identify a particular product.

For the lower frequency bands the read ranges of passive tags are not more than couple feet because of poor antenna gain. The electromagnetic wavelength is very high at lower frequencies. At high frequency there is increase in the read range specially where active tags are used.

RFID systems have low data rate operating in the LF band. With frequency of operating there is increase in the data rate reaching the M bits range at microwave frequencies.

2.2SECURITY OF RFID

Retailers such as Walmart, which already heavily use RFID for inventory purposes, also use RFID as an anti-employee-theft and anti-shoplifting technology. If a product with an active RFID tag passes the exit-scanners at a Walmart outlet, not only does it set off an alarm, but it also tells security personnel exactly what product to look for in the shopper's cart.A second method of prevention is by using cryptography. Rolling codes and challenge-response authentication (CRA) are commonly used to foil monitor-repetition of the messages between the tag and reader; Security concerns exist in regard to privacy over the unauthorized reading of RFID tags, as well as security concerns over server security. Unauthorized readers can use the RFID information to track the package, and so the consumer or carrier, as well as identify the contents of a package. Several prototype systems are being developed to combat unauthorized reading, including RFID signal interruption, as well as the possibility of legislation, and 700 scientific papers have been published on this matter since 2002. There are also concerns that the database structure of servers for the readers may be susceptible to infiltration, similar to denial-of-service attacks, after the EPCglobal Network ONS root servers were shown to be vulnerable.

The use of RFID has engendered considerable controversy and even product boycotts by consumer privacy advocates. Consumer privacy experts Katherine Albercht and Liz McIntyre are two prominent critics of the "spy chip" technology. The two main privacy concerns regarding RFID are:

- Since the owner of an item will not necessarily be aware of the presence of an RFID tag and the tag can be read at a distance without the knowledge of the individual, it becomes possible to gather sensitive data about an individual without consent.
- If a tagged item is paid for by credit card or in conjunction with use of a loyalty card, then it would be possible to indirectly deduce the identity of the purchaser by reading the globally unique ID of that item

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(contained in the RFID tag).

CONCLUSION

Thus the system was operated successfully, with the RFID reader and voice bank system had to detected the products and got audio output through the voice bank system.The RFID was automatically detected and got the output in sound. In our project can process in our daily lives for blind people. And also it's a real time use of the blind people life and the output was taken in successfully.

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