Android Based Visual Product Identification for the Blind

R. Thiagarajan[1], Rangani Kalyani[2], Paluru Praveena[3], P. Shiny Shraon[4]

[1]Assistant Professor, [2,3,4]Final Year Student, Department of CSE,
Prathyusha Engineering College, Chennai, India
Thiagarajan.cse@prathyusha.edu.in[1], praveenachowdary57@gmail.com[2],
kalyanirangani750@gmail.com[3], sharonshiny2027@gmail.com[4]

Abstract

This application is build to help the visually challenged people. This is a camera-based system. Camera is used to scan the barcode on the product .This provides the product details that are gathered in the barcode id. It is very useful in case of detecting the product details of wraped goods to the visually challenged people and guiding them whether to purchase the goods or not to purchase the goods .To operate this system , the blind people need to capture the image of the product and then it will scan the picture to detect the barcode . This system is highly useful for the blind people for finding the product details. The blind people are facing difficulties during the shopping activities in that case, this application is very useful. This application is very easy to operate and it is affordable by the blind people. This is easy to implement because most of the blind people are using the smart phone today this can also be used in shopping malls, supermarket, medical stores.

Keywords: *Barcode, Camera , Product, Scan, Supermarket*

1. Introduction

When it comes to shopping, people who are blind or visually impaired have the same option as everyone has. By, using some alternative tips and technique, they can also shop independently with ease. Researchers wants to help visually impaired people to shop independently by creating mobile application and any other devices. Most of the super markets will not provide the braille on the product description, in that case blind people will face lots of difficulties while doing shopping .It is very important for the blind people to check the necessary details before going to purchase any product. Most of the time people around them will not be available to help them regularly. Now a days lots of visually impaired people started using smart phones as how the others are using. Smart phones are the convenient tool for those visually challenged people. We can use this advantage for blind people during shopping.

This application is completely developed to help the visually challenged people during shopping. voice guidance is implemented in this mobile application for using this in appropriate way. This is a an user convenient application . The product details are provided very clearly in audio. Voice guidance is necessary while doing mobile applications for visually challenged people. This application is designed completely for android mobiles. The identification of goods such as supermarket products and all is very useful for visually impaired person

2. Existing System

Barcode scanning applications are developed to scan the barcodes on the products and retrieve the data stored in the barcode id .ZXing (zebra crossing) that permits an Android mobile with capturing hardware to examine the barcodes and receive the data encoded. Information encoded often includes web addresses geographical coorelate and small pieces of text in addition to profit oriented product codes. This android based system has same performance to a hardware barcode reader. Many reading assistants are developed to help the blind people in the hardware format. RedLaser is an precise barcode and QR code scanner for your Android device. It can scan

all the major retail barcode available like UPC, EAN and even QR codes. All these mobile applications are developed for the persons who are not visually impaired. These applications are not very helpful for the visually challenged people.

Figure 1: A person scanning the barcode

3. Proposed System

Our system is a android based mobile application for the blind people to provide the product details to the visually challenged people. It is camera-based system to scan the barcode of the product. The camera will capture the images of the product to find the barcode. Once it finds the barcode it stops scanning farther and it will provide the details of the product that is matched with the barcode id from the database.

The android framework includes capture for various cameras and camera characteristics available on devices, allowing you to capture pictures and videos in an application. The android framework assist capturing images and video across android. hardware. camera API or camera Intent

3.1 Android. Hardware. Camera

This package is the main API for manage device cameras. It can be used to take pictures or vedios when you are building a camera application.

3.2 Camera

This class is the ancient deprecated API for manage device cameras.

3.3 Surface view

This class is used to available a live camera show to the user

3.4 Media Recorder

It is used to register video from the camera

3.5 Intent

An intention is an action type of MediaStore which ACTION_IMAGE_CAPTURE or

MediaStore.ACTION_VIDEO_CAPTURE can be used to catch images or videos without directly using the camera device.

3.6 Barcode detection algorithm

Barcodes can have attach or variable length. In fixed length codes, the standard identify how many characters are specified in a code, while the other type many encode an random number of characters various standard code types have particular characteristics that Barcode identification is required in a vast range of real-life applications. Computer monitoring algorithms can vary significantly and each application has its own requires. Many barcode localization types have been developed for automatically dividing barcode patterns from images. The word barcode can be used for various types of optical codes. In this paper it deal with traditional id barcodes and stored sequentially in 2D barcodes. Barcodes are not human readable and classical devices have been broadly adapted for individual user. The standard barcode form is easy: the alternatively of definite thickness of similar light and dark bars constitute details. Such codes can be read optic by a device. Code types different from each other in what arrangements of black and white bars equivalent to a given character. The most recurrent application of barcodes is the deal example in goods packing the id number forecasting with symbols allow the use of electronic study by machines which suspect and speed up the details help their localization. Figure 2 shows a set of standard id barcode types and some broadly used 2D barcode types

Figure 2: Types of barcodes

3.7 Conversion of text to audio in Android studio

Text to speech creates an android mobile study the text and change it to voice through the speaker. Android text to speech assists multiple languages. Text to Speech is a simple but strong feature. It can also be beneficially used in mobile APPs commited to visually challenged people or in teaching app for kids, etc. The above mentioned are a few of the ways to use text to speech. Using Text To Speech increases interaction between the shopper and the application.

Android text to speech was obtainable from version 1.6. It has characteristics to maintain speed as well as kind of language
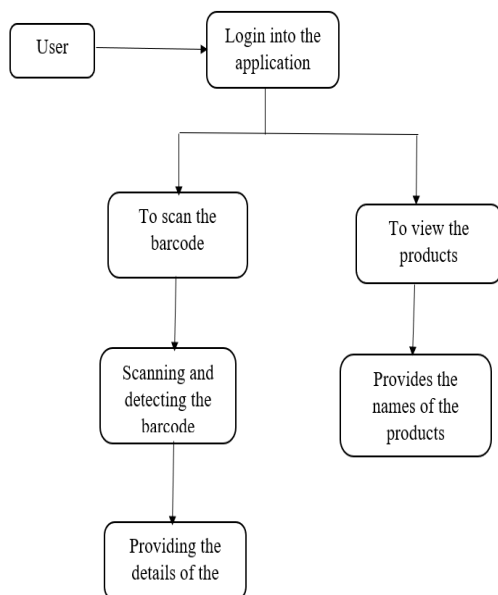

Figure 3: Block Diagram

4.   Literature Review

Many hardware barcode scanners are available in the market. Barcode bibliophile is an visual reader that could study stamped barcodes, decryption the information introduced in the barcode and forward the details to a computer. Like a flatbed bibliophile , it has of a light originator, a lens and light sensor sending for ocular choose into charged signals. Different types of barcode readers are existed. Pen-type reader include of a light originator and photocurrent that are arranged next to each other in the tine of a pen. Laser beam scanner work the similar way as the pen-type reader except that they use a laser beam as the light origin. CCD readers use an array of many of tiny light sensors and lined up in the row in the head of the row.

5.   Modules

5.1 User Modules

5.1.1 Login

A user need to login in to the mobile application to start the application process. The module is designed in such a way it easy to use by the blind people. The blind need to long press the screen to enter into the application.

5.1.2 Scanning Product

The user to need to sacn the product in this module. This gives the voice feedback to the user to start the scanning.
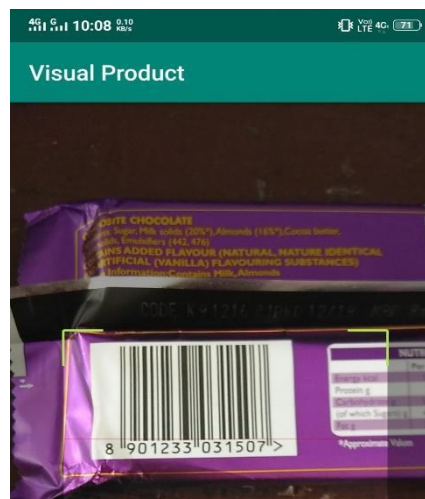
If the user touch the screen once this gives voice "SCAN OF PRODUCT" then user need to scan the product by lisenting the voice.

Figure 4: Camera scanning the barcode

5.1.3 View of Products

This is view of the products that the user can know that what are the products that are available in the stores. By touching on the screen it will tell the name of the product

5.1.4 Providing The Product Details

This is the module that is used to provide the product details. After scanning the barcode it will detect the barcode and fetchs the data that is matched with the barcode id. This will give the voice description of the details that are stored in the barcode id

Figure 5: Providing the product description

5.2 Admin Modules

5.2.1 Add Product

The admin need to enter the products in the database. This contains the barcode id, name of the product, product description. He need enter necessary details about the product in the product description like manufacturing date,expiry date,price of product,quantity, etc.

5.2.2 Delete All

The admin can delete the products that are stored in the database by clicking the delete all option.

6.   Conclusion

This project provides the solution for the reading the 1D barcodes and fetching the details stacked in the barcode id.In future we schedule to expand our system to symbologies other than UPC-A such as the EAN-13(which is wide spread in Europe)

Experiments with the optically imparied volunteer candidate demonstrate the feasibility of the system and recommend that its usability is obviously enhanced by if and only if the feedback to the user.

References

[1]   A. Shahab, F. Shafait, and A. Dengel, ―ICDAR 2011 robust reading competition: ICDAR Robust Reading Competition Challenge 2: Reading text in scene images,‖ in Proc. Int. Conf. Document Anal. Recognition, 2011, pp. 1491–1496.

[2]   Advance Data Reports from the National Health Interview Survey (2008). http://www.cdc.gov/nchs/nhis/nhis_ad.htm

[3]   B. Epshtein, E. Ofek, and Y. Wexler, ―Detecting text in natural scenes with stroke width transform,‖ in Proc. Comput. Vision Pattern Recognition, 2010, pp. 2963–2970.

[4]   C. Yi and Y. Tian, ―Assistive text reading from complex background for blind persons,‖ in Proc. Int. Workshop Camera-Based Document Anal. Recognit., 2011, vol. LNCS-7139, pp. 15–28.

[5]   C. Yi and Y. Tian, ―Text string detection from natural scenes by structure based partition and grouping,‖ IEEE Trans. Image Process., vol. 20, no. 9, pp. 2594–2605, Sep. 2011.

[6]   International Workshop on Camera-Based Document Analysis and Recognition (CBDAR 2005, 2007, 2009, 2011). [Online]. Available: http://www.m.cs.osakafuu.ac.jp/cbdar2011/

[7]   A. Shahab, F. Shafait, and A. Dengel, ―ICDAR 2011 robust reading competition:ICDAR Robust Reading Competition Challenge 2: Reading text in scene images,‖ in Proc. Int. Conf. Document Anal. Recognition, 2011, pp. 1491–1496.

[8]   Advance Data Reports from the National Health Interview Survey (2008).[Online]. http://www.cdc.gov/nchs/nhis/nhis_ad.htm.

[9]   B. Epshtein, E. Ofek, and Y. Wexler, ―Detecting text in natural scenes with stroke width transform,‖ in Proc. Comput. Vision Pattern Recognition, 2010, pp. 2963–2970.

[10]   C. Yi and Y. Tian, ―Assistive text reading from complex background for blind persons,‖ in Proc. Int. Workshop Camera-Based Document Anal. Recognit., 2011, vol. LNCS-7139, pp. 15–28.

[11]   C. Yi and Y. Tian, ―Text string detection from natural scenes by structure based partition and grouping,‖ IEEE Trans. Image Process., vol. 20, no. 9, pp. 2594–2605, Sep. 2011.

[12]   International Workshop on Camera-Based Document Analysis and Recognition(CBDAR 2005, 2007, 2009, 2011). [Online]. Available: http://www.m.cs.osakafuu.ac.jp/cbdar2011/

[13]   World Health Organization. (2009). 10 facts about blindness and visual impairment [Online]. Available:www.who.int/features/factfiles/ blindness/blindness_facts/en/index.html International Journal of Engineering Research and General Science Volume 4, Issue 2, March-April, 2016 ISSN 2091-2730 417 www.ijergs.org

[14]   T.Phan,P.Shivakumara and C.L.Tan, ―ALaplacian method for video text detection,‖ in Proc. Int. Conf. Document Anal. Recognit., 2009,pp. 66–70.

[15]   International Workshop on Camera-Based Document Analysis and Recognition (CBDAR 2005, 2007, 2009, 2011). [Online]. Available: http://www.m.cs.osakafu-u.ac.jp/cbdar2011/