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Camera Based Product Identification Android Application For Blind People

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Abstract– *We propose camera based Product identification android application for Blind people. These days every Commercial business may it be a small pin to large products, business cards to Webpages uses Barcodes or QR codes. So we take these developments in technology to help visually impaired people to identify a product using barcode Scanners and Text to Speech. The user opens the app, which in turn opens the camera and ready to scan the barcode, one it finds it will read all the details of the product like Name, description, cost, expiry date etc.*

Keywords *-UPC- Universal Product Code ,1D –One Dimensional and 2D- Two Dimensional.*

I Introduction

According to theWorld Health Organization (WHO), there are approximately 253 million people live with vision impairment, 36 million are blind and 217 million have moderate to severe vision impairment.

This project is developed to make the life of blind people easy. This is a camera-based system to scan the barcode behind the image and read the description of the product with the help of Id stored in the barcode. This is very beneficial in case of finding out the description of packaged goods to the blind people and thus helping them in deciding to purchase a product or not especially, which are packaged. This is because it becomes very difficult for the blind people to distinguish between the packaged goods. In order to use this system, all the user needs to do is capture the image on the product in the mobile phone which then resolves the barcode which means it scans the image to find out the Id stored. Thus, this application really benefits blind and visually impaired people and thus making their work of identifying products easy. This is very easy to use and affordable, as it requires a scanner to scan the barcode and a camera phone to take the picture of the image containing the barcode. This is now easy to implement as most of the mobile phones today have the required resolution in order to scan the barcode to identify the Id stored in it and read out the product description. This project can be implemented in any shopping mall, supermarket, Bookstores, Medical stores etc.

II Scope And Objective

The aim of this project is to develop an algorithm that will enable blind users to get information about a particular product.

We build on our recent work focusing on reading a barcode (assuming it has already been segmented) using a Bayesian deformable template algorithm that combines a prior model of the geometric shape of the barcode pattern with a likelihood model that evaluates evidence in the image for edges. Such an approach is a principled technique of decoding noisy barcode images that contain spurious (or missing) edges. A related approach, also based on deformable templates, can successfully decode barcodes from extremely blurry and noisy pictures.

Finally, we note that there is growing interest in the use of 2D barcodes, which are better suited to acquisition by camera than 1D barcodes, and encode information more densely. While 2D barcodes will one day, supplant their 1D predecessors, at present almost all packaged goods are still labeled with 1D barcodes, which is why this paper focuses on them.

III Existing System

Problem with current scenario

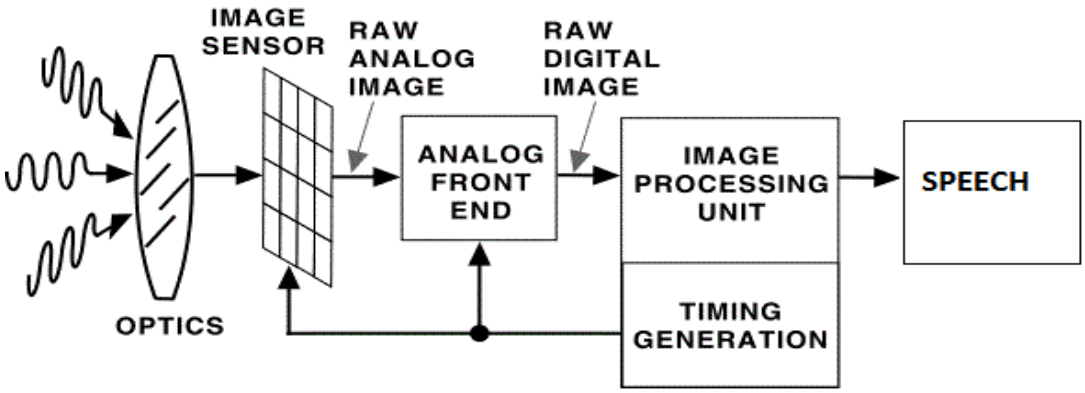
Blind visually impaired and old peoples with low vision tend to rely on others to go out and buy their essential products. The busy schedules won't allow people to help them out every time. Hence, there is need of fast efficient and inexpensive way of scanning large number of barcodes and read out the information of corresponding product.

Drawbacks of the existing system

- Maintenance of the system is very difficult.
- There is a possibility for getting inaccurate results.
- User friendliness is very less.
- It consumes more time for processing the task.

IV Proposed System

- Considering the anomalies in the existing system computerization of the whole activity is being suggested after initial analysis.
- The project is developed using Android Studio with JAVA as programming language.
- Two entities will have the access to the system. One is the admin and another one will be the blind user.
- This application is very helpful for blind people to buy a product from a shopping mall.
- Admin will add the products with its details and also can perform edit, update and delete operation on it.
- A blind user will open the application with the help of google voice command as "**Open Visual Product**
- **Identification Application**".
- Using scan button and with the help of on click voice assistant, a message will be read out.
- User will scan a product barcode and will get to know the details of that product through voice assistant.
- User can also search a product by its name by using voice command.



Figure(1): Workflow

Algorithm for Finding Barcod-es

1D-barcode patterns are characterized by a rectangular array of parallel lines. The particular symbol we focus on in this paper is UPC-A, which is widespread in North America and encodes a total of 12 decimal digits (one of which is a checksum digit that is a function of the preceding eleven digits). The UPC-A pattern contains a sequence of 29 white and 30 black bars, for a total of 60 edges of alternating polarity.

Figure(2): UPC-A barcode, encoding 12 digits

The code axis runs left to right in this image and the bar axis runs vertically upwards. Note that the bar patterns representing any specific digit have opposite polarity on the left and right sides of the barcode.

System architecture mentioned in figure(3)-

The system comprises of 2 major modules with their sub-modules as follows:

1. **Admin:**

a. **Login:** Using valid credentials, admin need to login first to access below given modules.

b. **Add Product:** All the products with its details will be added by the admin.

c. **Product List:** List of all added products will be displayed to the admin.

d. **Update Product Details:** System allows admin to edit and update the product details.

e. Delete Product: Admin can also delete a product from the list.

2. User:

a. Voice Command Search: Using google voice command, user can search for the application, which will be opened by the google.

b. Product Details via Barcode Scanning: A blind user will be having Visual Product Identification application installed in the android phone using which user will blindly click on scan button and voice assistant will guide on which button he/she clicked. Scan button will open up the barcode scanner.

Search Product by Name: Using Voice to text search, a blind person can search for a desired product with their details.

Figure(3): System Architecture

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2	UPC-A barcode, encoding 12 digits
3	System Architecture

VI Conclusion

This System represents an important step towards providing free and convenient access to product information. The user interface explicitly guides the user to point the camera at the desired target. This function is needed by blind users of nearly any computer vision technology.

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