

# A Voice Based Visual Product Identification for Blind Persons

## Using Barcode Scanning: An Overview

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**Abstract-** To make life of blind easy this project is developed. There will be some of possibilities of cheating. To make them independent and they should personally know about the all product purchased by them we are going to develop these project. 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. So that these project is very useful for blind people as well as normal people. 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, Book stores, Medical stores etc.

**Keywords-** Barcode, Camera phone, Scanner

### I. INTRODUCTION

Now a days there is big problem with blind people is they are always depend on other people at the process of buying product. There will be some of possibilities of cheating. To make them independent and they should personally know about the all product purchased by them we are going to develop these project. This project is developed to make the life of blind people easy. While there are numerous standardized tag perusers accessible for distinguishing items in a store or at home on cell phones (e.g., Red Laser iPhone application), such perusers are difficult to reach to daze or outwardly impeded people on account of their dependence on visual criticism from the client to focus the scanner tag in the camera's field of view. We depict a cell phone application that controls an outwardly disabled client to the standardized tag on a bundle continuously utilizing the telephone's worked in camcorder. Once the standardized tag is situated by the

framework, the client is provoked with sound signs to convey the camera closer to the scanner tag until the point when it tends to be settled by the camera, which is then decoded and the relating item data read so anyone might hear utilizing content to-discourse. Trials with a visually impaired volunteer exhibit evidence of idea of our framework, which enabled the volunteer to find standardized tags which were then meant item data that was declared to the client. While there are numerous standardized identification perusers accessible for distinguishing items in a grocery store or at home on cell phones (e.g., Red Laser iPhone application), such perusers are blocked off to dazzle or outwardly disabled people in light of their dependence on visual input from the client to focus the scanner tag in the camera's field of view. We depict a cell phone application that manages an outwardly disabled client to the standardized identification on a bundle progressively utilizing the telephone's worked in camcorder. Once the scanner tag is situated by the framework, the client is incited with sound signs to convey the camera closer to the standardized identification until the point that it tends to be settled by the camera, which is then decoded and the comparing item data read so anyone might hear utilizing content to-discourse. Examinations with a visually impaired volunteer show confirmation of idea of our framework, which enabled the volunteer to find standardized identifications which were then meant item data that was reported to the client.

### II. OBJECTIVES

- To implement a system with android application, which can provide the product information after barcode reading process.
- To implement the system using cloud data servers, which can available for end users 24\*7.
- To implement the REST full services data connectivity which can eliminate the data inconsistency.
- To implement the platform independent application that can work in all environments.

### III. LITERATURE SURVEY

Vijaya Lakshmi, a 2D color barcode can hold much more information in comparison to a binary barcode. 2D barcode is gaining popularity for versatile applications. At the point

when utilized together with camera telephones, the 2D scanner tag can offer a connection between the advanced and this present reality. 2D standardized tags have expanding centrality as the nearness of high-goals cameras, joined with the accessibility of variable information printing, drives expanding measures of "click and interface" applications. Standardized tags subsequently, fill in as a more indispensable association among physical and electronic bits, or adaptations, of archives itself.

Aryachandran S., 2D barcodes improve the working of single dimensional barcode by providing higher rate. Here the data is encoded in both height and breadth of barcode. Nearly 30 different types of barcodes are known. These some are normally used like data matrix code, shot code, Visual code etc. The 2D barcodes can be wide divided into two categories: Index-based barcodes and database two dimensional (2D) Barcodes. The type index-based 2D barcodes take under consideration the reading limitations of those inbuilt cameras. The Visual Code, Shot Code, and ColorCode belonging to this have a much lower information ability than database 2D scanner tags; anyway they give solid and dependable standardized identification perusing. The database 2D standardized identification were toward the begin made-up to help information ability for modern applications. In any case, when coordinated into cell phones with inbuilt cameras that can check and unravel information, these 2D standardized tags can work as moveable databases, giving clients a chance to get to data whenever, anywhere, regardless of system property. Currently allow us to move to important and popular 2D barcodes .

Jonathan M. McCune, here now discusses related work in using camera-equipped mobile phones to recognize barcodes. Numerous ventures be present so as to demand to permit camera-prepared cell telephones to move through objective questions during the usage of 2D standardized tags. Rohs as well as Gfeller built up their own 2D code unequivocally to be utilized with cell phones, activity their capacity to be check as of electronic screen as well as on paper. Woodside created semacodes that is relate execution of the Data Matrix standardized tag standard for cell phone. Woodside consider the main use of semacodes as compartments intended for URL that contain data concerning the substantial area wherever the scanner tag be introduced. It utilized SpotCodes to upgrade (HCI) human-PC collaboration by utilizing a camera-telephone as a pointing and decision gadget. Specialists working on the CoolTown venture at H.P. Labs proposed labeling gadgets approximately the home by scanner tags to be examine through camera telephones or PDAs so further information concerning the labeled gadget could be essentially recovered.

Hiroko Kato, camera telephones have penetrated into our regular daily existences, the 2D standardized identification has pulled in scientists and engineers as a savvy present figuring

instrument. An assortment of 2D standardized tags and their applications are created. By the by, they require not been wide utilized. A conceivable confinement is their flippancy as far as convenience and vigor. Expanding information ability is one of the arrangements that address the two issues since it helps give a more extensive kind of utilizations and enhance the vigor utilizing further information capacity for blunder discovery and amendment. A method for accomplishing this is to utilize shading images for encoding information. Nonetheless, utilizing a bigger large number of hues presents issues that can adversely affect the vigor of standardized identification perusing. This can be genuine when building up a 2D scanner tag for cell phones.

Douglas Chai, as for using a lot of hues, it's very much recorded that right shading recognizable proof is a troublesome errand, especially for versatile applications that haven't any power over the operational condition. Diverse lighting conditions, and also extraordinary standardized tag perusing gadgets, result in entirely unexpected hues recognized inside the equivalent scanner tag. In addition, distinctive goals cameras crosswise over various cell phones, and in addition the telephones' picture pressure systems, smirch the hues on the fringes of neighboring information cells. This extra confounds the errand of accurately distinguishing standardized tag hues, which is the reason so few shading 2D scanner tags so far utilize in excess of four hues. In spite of the fact that a portion of the difficulties in building up a shading 2D standardized tag for versatile applications are regular to the improvement of various sorts of scanner tags, others are particular to the utilization of hues and even extra so in versatile applications.

#### IV. EXISTING SYSTEM

Before we delve into the points of interest of our algorithms, we give a concise outline of the real advances. The framework can be separated into four primary sub-frameworks: a discovery part that searches for proof of a standardized identification in the picture, a heading framework that directs the client to a scanner tag on the off chance that one is discovered, an unraveling step that interprets the genuine UPC-A code from the standardized identification once every one of the edges are seen, and the last stage which coordinates the UPC-A code to an item depictions and yields this data. The following is a rundown of these means:

##### **1. Detection:**

- (a) Lines in 4 unique introductions cleared to decide gathering of edge focuses with exchanging polarities.
- (b) Line scores counted in heading opposite to clear course to get 2D portrayal of conceivable scanner tag zones.
- (c) Orientation entropy used to wipe out false positives (e.g. thick content).

**2. Direction:**

- (a) A maximal jumping box to encase the recognized standardized identification is determined.  
 (b) The client is coordinated to the standardized tag by voice directions until the point when enough edges are seen.

**3. Decoding:**

- (a) Slices with greatest number of edges are found and edges limited with sub-pixel exactness.  
 (b) Maximum probability (ML) estimation of the central width and settled edges.  
 (c) ML estimation of the standardized tag digits utilizing the check bit.  
 (d) Detection endeavored both right side up and topsy turvy.

**4. Output:**

- (a) Product data recovered from database and read out.

**V. RESEARCH METHODOLOGY**

The proposed system involves recognition of barcodes. Through scanning the barcode the user get information about the product. Here figure 1Gives the detail idea about the working mechanism of the whole system. These system explains the how the visual impaired peoples can the benefit of these system product information and update product information to the database. User needs a product barcode reader through these user scan the barcode. After scanning is done it will check the barcode Id with the database entries, if the Id is match with the database entries then it will retrieve the information of product from the database. The information retrieved from database is converted to the audio from text format. So that user get information in text as well as audio format. The proposed system carried out the product identification system for blind peoples, the system provides voice output once barcode has scanned by end user.

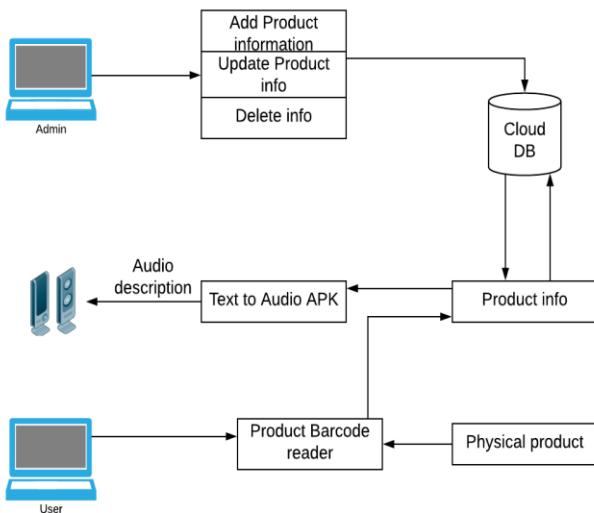


Fig.1: System Architecture

- **ReadCode :** This function can read the data from barcode image using barcode scanner as well as mobile camera.
- **Connection :** It can generate the connection between mobile and cloud data server
- **ReadDb :** This function first established the database connection and then read the data from product master table.
- **ToConvert :** It can convert the text data into audio foam, to achieve this output we use the google translator API.

**A. Modules:****1. Barcode Scanning and Pre-processing:**

The barcode recognition module consists of three parts: bar detection, barcode detection, and a barcode comparison block. The bar detection block detects bars from the barcode feature signal. First, it tries to identify a black bar, if it is not there, then the first bar has zero width. If there is a black bar, then it calculates the pixels of the black bar. For the white bars, it does the same.

**2. Database Accessing:**

After Scanning of barcode is done it get the barcode Id. Then the system checks whether the scanned barcode ID is present in database or not. If that Id is present in the database it will retrieve the all information of product stored in the database and display to the user and if that Id is not match with the database entries then it will unable to show the information of product.

**3. Text –TO–Voice Conversion:**

Here the information retrieved from the database is given to user in text as well as voice format. The content-to-discourse (TTS) union strategy comprises of two primary stages. The first is content investigation, where the info content is interpreted into a phonetic or some other etymological portrayal, and the second one is the age of discourse waveforms, where the yield is delivered from this phonetic and prosodic data. Due to conversion of information in voice the user can get information in voice.

**B. Text-To-Speech Algorithm**

Text-to-speech amalgamation happens in a few stages. The TTS frameworks get a content as info, which it initially should investigate and afterward change into a phonetic portrayal. At that point in a further advance it creates the prosody. From the information now available, it can produce a discourse flag. The structure of the text-to-speech synthesizer can be separated into significant modules:

- **Natural Language Processing module:** It delivers a phonetic translation of the content read, together with prosody.
- **Digital Signal Processing module:** It transforms the representative information it receives from NLP into audible and intelligible speech.

The major operations of the NLP module are as follows:

- **Text Analysis:** First the text is segmented into tokens. The token-to-word conversion creates the orthographic form of the token. For the token “Mr” the orthographic form “Mister” is formed by expansion, the token “12” gets the orthographic form “twelve” and “1997” is transformed to “nineteen ninety seven”.
- **Application of Pronunciation Rules:** After the text analysis has been completed, pronunciation rules can be applied. Letters cannot be transformed 1:1 into phonemes because correspondence is not always parallel. In certain environments, a single letter can correspond to either no phoneme (for example, “h” in “caught”) or several phoneme (“m” in “Maximum”). In addition, several letters can correspond to a single phoneme (“ch” in “rich”). There are two strategies to determine pronunciation: In dictionary-based solution with morphological components, as many morphemes (words) as possible are stored in a dictionary. Full forms are generated by means of inflection, derivation and composition rules. Alternatively, a full form dictionary is used in which all possible word forms are stored. Pronunciation rules determine the pronunciation of words not found in the dictionary. In a rule based solution, pronunciation rules are generated from the phonological knowledge of dictionaries. Only words whose pronunciation is a complete exception are included in the dictionary. The two applications differ significantly in the size of their dictionaries. The dictionary-based solution is many times larger than the rules-based solution’s dictionary of exception. However, dictionary-based solutions can be more exact than rule-based solution if they have a large enough phonetic dictionary available.
- **Prosody Generation:** after the pronunciation has been determined, the prosody is generated. The degree of naturalness of a TTS system is dependent on prosodic factors like intonation modelling (phrasing and accentuation), amplitude modelling and duration modelling (including the duration of sound and the duration of pauses, which determines the length of the syllable and the tempos of the speech) [16].

The output of the NLP module is passed to the DSP module. This is where the actual synthesis of speech happens. In concatenative synthesis the selection and linking of speech segments take place. For individual sounds the best option (where several appropriate options are available) are selected from a database and concatenated.

### C. Applications

- Scan and pay applications
- Paytm applications
- Payment validation applications

### VI. CONCLUSION

In this paper we have proposed a system which will help the visually impaired people to identify the information of product. This work represents a solution for finding and perusing 1D scanner tags, proposed for use by the outwardly debilitated clients. A key component of the calculation is the capacity to identify standardized identifications at some separation, enabling the client to quickly examine bundles previous to housing in on a scanner tag. Test outcome among a blindfolded topic exhibit the possibility of the framework. Later on we intend to port our framework to a camera telephone. Tests with visually impaired/outwardly weakened volunteer members exhibit the possibility of the framework and suggest that its usability is significantly enhanced by real-time feedback to help the user find barcodes before they are read. We are exploring commercialization options of the application, including collaboration with an organization interested in releasing a consumer-oriented smart phone app that includes detailed information associated with a barcode (e.g., preparation instructions for packaged items).

### VII. FUTURE WORK

We contain portrayed a new calculation for discovering as well as perusing 1D scanner tags, planned intended for utilize through visually impaired also outwardly impeded clients. A input element of calculation is a capacity to recognize standardized identifications at some separation, enabling the client to quickly examine bundles before homing in on a scanner tag. Exploratory outcomes with a blindfolded subject exhibit the possibility of the framework. Later on we expect to port our structure to a camera phone, and to extend our system to symbologies other than UPC-A, for instance, the EAN-13.

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