

Aisat Property Management System (APMS)

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Abstract

This app is used to store and manage accounts of properties belonging to the respective branches. It makes use of QR code scanning hence we can avoid time consumption due to typing and clerical errors. For using this app, each classes and properties are given a unique QR code. Initially we are defining each department as database and using our app we select a particular department and when we click on add new class, the scanner is activated and it is ready to scan the QR code. After reading the QR code, a table with class id as a table name is created under the database with attributes properties, property id. After adding all rooms to each DB, we can add the properties contained in each room by scanning the QR code provided to all properties. Only the admin has the privileges to add/remove property from a table. Others have only the privilege to view the tables.

Keyword- Barcode Scanning, Aisat Property Management System (APMS)

I. INTRODUCTION

In this project, we propose a system called Aisat Property Management System (APMS). The APMS serves the user for keeping records of properties belonging to each department of a particular college and it also keeps records of library books available in the library. The proposed system is far better than the conventional of handling records of a particular property. The conventional system has many drawbacks such as loss of data, time consumption, data inconsistency etc. The proposed system is designed in such a way that it fill in these drawbacks of the traditional way of handling records. APMS is faster, less prone to human errors, convenient etc. Therefore this system can replace the traditional way of handling records.

The proposed system called APMS is far better than conventional way of handling records or any other system if available. The proposed system is more convenient, error free, less time consumption, no record will be lost and it is easy to use. This system make use of bar code scanning to add properties into the database. Therefore each property is provided with a bar code or QR code. This system has mainly two actors, the admin and non-teaching staff. The admin has the full privilege over the system like add or remove property. The other users can only view the properties belonging to a particular class room. This system has a simple UI. Therefore no prior training is not required to use this system.

II. LITERATURE SURVEY

A. HC2D Barcode Reader using Embedded Camera in Android Phone

The HC2D barcode is a highest capacity of 2D barcode while it occupies a small area. The size of the HC2D barcode is suitable for displaying on print media such as paper and poster. But, for reading the HC2D barcode, the bit representation of the barcode is obtained by scanning the image of the barcode with scanner machine only. This paper shows the implementations of image reorganization of HC2D barcodes in mobile phones with android operating system. The mobile phone system used here consists of a camera, mobile application and display device, and the source image is captured by the embedded camera device. The introduced algorithm is based on the code area found by two vertical line, one horizontal line and dash line detection of HC2D barcode. This algorithm is robust for the real-time recognition of the HC2D barcodes and an average recognition rate is 91.33%. Nowadays, almost of mobile phones have embedded camera devices, and some of those have more than over megapixel range image sensor cameras. Also, the embedded camera devices can be used as new input interfaces such as for symbol recognition. In the recent, most mobile phones, with camera devices support symbol recognition, such as 1D barcode and 2D barcode [1] (PDF417 barcode [2], datamatrix barcode [3], and QR code [4]) and these code symbols are used for reading URLs or plaintext. HC2D barcode [5] is largest capacity of 2D barcode for communication, public relations, and data transport. However, in general, the HC2D barcode can recognition only in scanner machine. This paper presents HC2D Barcode readers using the embedded camera device in mobile phones. The purpose is to design a new image recognition algorithm for read the HC2D barcode in real time mode. This paper consists of five sections. II. HC2D BARCODE A HC2D barcode is a 2D barcode which consists of a black square pattern on white background. The HC2D barcode contains information in the vertical direction as well as the horizontal direction. The data capacity can be the maximum of 7,250 numeric characters, 10,100 ASCII characters. HC2D barcode use the Reed-Solomon [6] error correction which can detect and correct multiple errors and HC2D barcode have an option to compression data it's powerful for a large of data. HC2D barcode can be read by standard scanners machine. The HC2D barcode is a greater

capacity than other 2D barcodes. Moreover, the shape of HC2D barcode is suitable for use with paper documents or print media. The HC2D barcode are shown in Fig. 1.

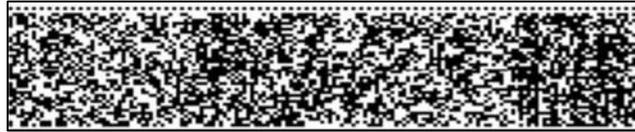


Fig. 1: The HC2D barcode

The HC2D barcode consists of a vertical line on the left of the barcode and a horizontal line on the bottom. The top of the vertical line is a detection point. Another detection point is where the vertical line and horizontal line meet. The dash line on the top is used for sampling column widths. The vertical line on the right is the stop indicator. Finally, the data area is configured as a 63x448 matrix which can store black and white pixels up to 28,224 pixels.

B. Design of Smart Shopping Application using Barcode Scanning and Location based Coupon Service

This paper intends to design an application, which is able to add products into mobile shopping cart by scanning the barcode through smartphone camera and place an order with connected online store. We expect that this study will tear down the walls between online and offline. Barcode scanning function is to scan the barcode of products through smartphone camera and then receives the products information. As soon as customers scan the barcode, it immediately shows a list of products in ascending or descending order of price.

Then, customers can save products into shopping cart in application. They can keep the product in the shopping cart as long as they want to or purchase through connected online store. There are some online stores will be connected to URL such as amazon, eBay, and so on. Smartphone industry has been grown rapidly since the supply and subscription rate of smartphone increase steadily. This change has created more jobs as well as opportunities to develop the nation. By developing new smartphone application, the industry has been extending the smart market and resulted in economic activation. As a result, people start depending on the online service. It means that people purchase more products from the internet rather than shopping at the offline store. "Showrooming" that checks out a product but then purchases the product online from home has been increased because one of the disadvantages of online store is they cannot see products with their eyes. "Reverse-showrooming" that goes online to research products then goes to offline store to make the purchase is also increased recently as people easily can find out the information from the internet. To attract both showrooming and reverse showrooming, service that reconciles online and offline at the same time should be provided [1]. In this study, we designed smartphone shopping application buy products at the offline stores. They do not have to carry their credit card or wallet. Lastly, barcode scanning application is used for being a role of museum curator, getting seminar information, etc. [2][3] All of these are the O2O applications to attract both showrooming and the reverse show rooming.

C. Barcode Readers using the Camera Device in Mobile Phone

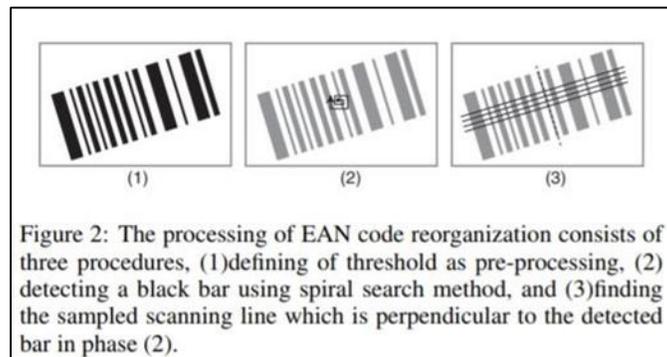
This paper shows new algorithms and the implementations of image reorganization for EAN/QR barcodes in mobile phones. The mobile phone system used here consists of a camera, mobile application processor, digital signal processor (DSP), and display device, and the source image is captured by the embedded camera device.

The introduced algorithm is based on the code area found by four corners detection for 2D barcode and spiral scanning for 1D barcode using the embedded DSP. This algorithm is robust for practical situations and the DSP has good enough performance for the real-time recognition of the codes. The performance of our image processing is 66.7 frames / sec for EAN code and 14.1 frames / sec for QR code image processing, and this is sufficient performance for practical use. The released mobile phone had performance of 5-10 frames / sec including OS and subsystem overheads.

The application processor works for displaying of the menu and preview in the display and computing of code recognition and decoding in real-time. With these systems, the user can control the position of the camera and decide the capture timing. The processing flow is as follows.

- 1) Execute the barcode reader application the application processor is changed into barcode reader mode by user menu selection.
- 2) Capture from embedded camera device the source images are captured by the embedded camera device via the camera interface, and these image are sent to two units, the DSP for image processing and the LCD controller for displaying the user preview.
- 3) Process the image in DSP The code is detected and processed in the DSP from the captured source image, and the processed image in this phase is output as the normalized size and binarized image of the code area.
- 4) Decode the code the processed code data in the previous phase is decoded in the host CPU, and the decoded code is derived to the application software.
- 5) Display the results the host application displays the decoded results.

EAN code has four width types for black and white bars, and these line directions are always located in parallel. In this algorithm,



These parallel black bars are used to recognize the area of the barcode, and we assume the centre of the picture includes part of the code area, because the computation cost of searching the barcode area is reduced by this assumption. This algorithm consists of the following phases (Figure 2):

- Pre-processing The input image from the embedded camera is pre-processed in this phase to define the threshold of the boundary between black and white intensity level, and the color space of the captured image consists of the YUV components, so we picked the Y component for this image processing.
- A black bar detection the pre-processed image is scanned using a spiral searching method, which scans in a spiral from the centre of the image, to find a black bar.
- Sampling the line perpendicular to black bars is calculated using the detected black bar in the previous phase, and the bar patterns are sampled based on the calculated direction. The result for the decoder program is not a bi-level image but 8-bit gray scale original data, because the black and white bar have four types of width and the decoding result is needed to decide the better threshold for each part in the line segment.

In addition, some characters are written at the bottom of the EAN code, but in our algorithm, these parts can be rejected by capturing the line length of black bars for some sampling lines using the spiral scanning, and these lengths determine the top and bottom boundaries of the code area. Also perspective and viewing distraction of ENA code can be ignored from our experimental results.

III. SYSTEM DEVELOPMENT

This app is used as a replacement of the conventional way of handling records. It is used to store details properties such as desk, bench and library books into the database. This app make use of bar code scanning into order add an item into the database.

IV. APPLICATION DEVELOPMENT IDE

Android is a software for mobile devices that includes an Operating system, middleware and key application. The SDK supports several different integrated development environments (IDE) but we have selected Android Studio because it is the best IDE integrated with the SDK no matter which operating system we use.

V. CONCLUSION

Since the old fashioned conventional way of handling records of properties is both cumbersome and inefficient, they are not an effective system for keeping tracks of properties. Therefore a new generation software like APMS should replace the conventional system since the APMS is faster and more convenient.

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