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ANDROID BASED PRODUCT IDENTIFICATION FOR VISUALLY IMPAIRED

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***Abstract*— This project helps the blind people to know about the product name, description by reading the QR code of the products. The QR code holds the information about the product such as name etc… The information is embedded inside the QR code. Our project is to generate such QR codes for the products and then reading the QR code using Android based smart phones and outputs as speech. So this is very helpful for the blind people. This is very useful for the self-service based shopping malls, Book stores etc… Since all the mobile phones has the camera, and the QR code can be scanned using the camera itself. So there is no need of additional devices to read the code. Since Shopping mall owners and big shopper bazaars sell products of all brands in a single place. So to assist blind people to shop easily the shopping owners can generate QR code using the PHP web application at ease. They need to simply registers the product and then it is generated as QR. Then they can place the QR in the items they sell. Then any customer with the "Blind Helper" Android application can easily scan the QR and the application speaks it aloud the information like product name, brand and price etc… which is embedded inside the QR. So this greatly helps the blind people in shopping. They don't need any other person to assist them in shopping. The server side application which generates the QR code is developed in PHP and the client side application runs in Android which reads the QR code is developed in Android.**

***Index Terms*— Blind Helper, QR Code, Android Studio.**

I. INTRODUCTION

Android Battery Saving System is a mobile Reading is obviously essential in today's society. Printed text is everywhere in the form of reports, receipts, bank statements, restaurant menus, classroom handouts, product packages, instructions on medicine bottles, etc. And while optical aids, video mangier and screen readers can help blind users and those with low vision to access documents, there are few devices that can provide good access to common handheld objects such as product packages, and objects printed with text such as prescription medication bottles. The ability of people who are blind or have significant visual impairments to read printed labels and product packages will enhance independent living, and foster economic and social self sufficiency. Today there are already a few systems that have some promise for portable use, but they cannot handle product labelling. For example portable bar code readers designed to help blind people identify different products in an extensive product database can enable users who are blind to access information about these products through speech and Braille. But a big limitation is that it is very hard for blind users to find the position of the bar code and to correctly point the bar code reader at the bar code. Some reading-assistive systems such as pen scanners, might be employed in these and similar situations.

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II. RELATED WORKS

A. X. Chen and A. L. Yuille, Detecting and reading text in natural scenes, In CVPR, Vol. 2, pp.II-366 II-373, 2004.

This paper gives an algorithm for detecting and reading text in natural images. The algorithm is intended for use by blind and visually impaired subjects walking through city scenes. We first obtain a dataset of city images taken by blind and normally sighted subjects. From this dataset, we manually label and extract the text regions. Next we perform statistical analysis of the text regions to determine which image features are reliable indicators of text and have low entropy (i.e. feature response is similar for all text images). We obtain weak classifiers by using joint probabilities for feature responses on and off text. These weak classifiers are used as input to an AdaBoost machine learning algorithm to train a strong classifier. In practice, we trained a cascade with 4 strong classifiers containing 79 features. An adaptive binarization and extension algorithm is applied to those regions selected by the cascade classifier. Commercial OCR software is used to read the text or reject it as a non-text region. The overall algorithm has a success rate of over 90% (evaluated by complete detection and reading of the text) on the test set and the unread text is typically small and distant from the viewer.

B. X. Chen, J. Yang, J. Zhang and A. Waibel, Automatic detection and recognition of signs from natural scenes, In IEEE Transactions on image processing, Vol. 13, No. 1, pp. 87-99, 2004.

In this paper, we present an approach to automatic detection and recognition of signs from natural scenes, and its application to a sign translation task. The proposed approach

embeds multiresolution and multiscale edge detection, adaptive searching, color analysis, and affine rectification in a hierarchical framework for sign detection, with different emphases at each phase to handle the text in different sizes, orientations, color distributions and backgrounds. We use affine rectification to recover deformation of the text regions caused by an inappropriate camera view angle. The procedure can significantly improve text detection rate and optical character recognition (OCR) accuracy. Instead of using binary information for OCR, we extract features from an intensity image directly. We propose a local intensity normalization method to effectively handle lighting variations, followed by a Gabor transform to obtain local features, and finally a linear discriminant analysis (LDA) method for feature selection. We have applied the approach in developing a Chinese sign translation system, which can automatically detect and recognize Chinese signs as input from a camera, and translate the recognized text into English.

C. D. Dakopoulos and N. G. Bourbakis, Wearable obstacle avoidance electronic travel aids for blind: a survey, In IEEE Transactions on systems, man, and cybernetics, Vol. 40, No. 1, pp. 25-35, 2010.

The last decades a variety of portable or wearable navigation systems have been developed to assist visually impaired people during navigation in known or unknown, indoor or outdoor environments. There are three main categories of these systems: electronic travel aids (ETAs), electronic orientation aids (EOAs), and position locator devices (PLDs). This paper presents a comparative survey among portable/wearable obstacle detection/avoidance systems (a subcategory of ETAs) in an effort to inform the research community and users about the capabilities of these systems and about the progress in assistive technology for visually impaired people. The survey is based on various features and performance parameters of the systems that classify them in categories, giving qualitative-quantitative measures. Finally, it offers a ranking, which will serve only as a reference point and not as a critique on these systems.

D. B. Epshtein, E. Ofek and Y. Wexler, Detecting text in natural scenes with stroke width transform, In CVPR, pp. 2963-2970, 2010.

We present a novel image operator that seeks to find the value of stroke width for each image pixel, and demonstrate its use on the task of text detection in natural images. The suggested operator is local and data dependent, which makes it fast and robust enough to eliminate the need for multi-scale computation or scanning windows. Extensive testing shows that the suggested scheme outperforms the latest published algorithms. Its simplicity allows the algorithm to detect texts in many fonts and languages.

III. METHODOLOGY:

The proposed system reads the QR code using Android based smart phones. Now a day's all are having smart phones with camera in it. Using the camera in the phone the QR code is scanned and the information inside it is extracted by the application. Then the extracted application is output as speech so that blind peoples can hear it conveniently. Moreover, the PHP based application generates the QR code so that any shopping malls, book stores can use this application to generate their customized QR code.

A. QR Generation

This is done in the administrator module. The owner of the shop or shopping mall generates this QR code for the available products.

This module runs in PHP.

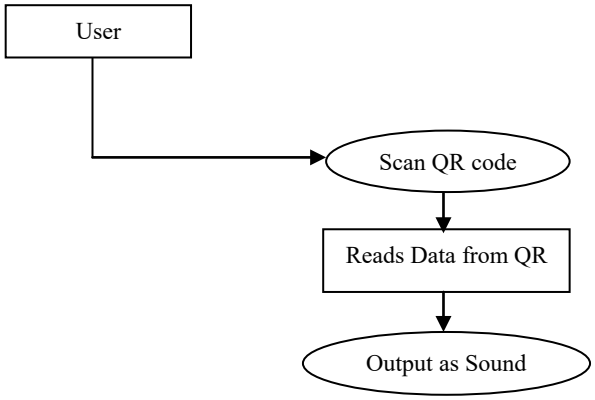
B. Reading QR Code

This is done using Android based mobile phones. Using the camera in the mobile phones the users can scan the available QR codes.

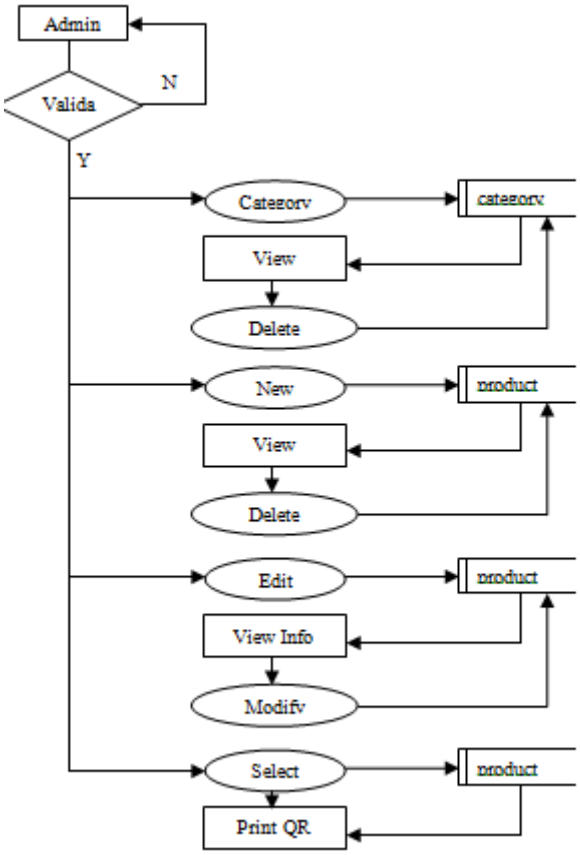
Then it fetches the information which is embedded inside the QR code given by the administrator who generated the QR code.

C. Output as Speech

Then the final task is reading it aloud the extracted information from the QR Code. This is also done in the Android module.



Data Flow Diagram for Admin



IV. CONCLUSION:

The development of the application gives us a pleasant experience and delivers the expected results excellently. The project “Shopping Helper for visually Impaired” is to mark the user to have the basic knowledge of computer. It helps people to run their necessary task online. The project is done in the computerized form. It is a Quick process and therefore saves time and money.

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