Portable Camera-Based Access To Visual Text Information From Hand-Held Objects

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Abstract- *We propose a camera based assistive text reading framework to help blind persons to read text labels and product packaging from hand held objects in their daily lives. To isolate the object from object for other surrounding object in the camera view. We first propose an efficient and effective motion based method to definr region of interest (ROI). In the extracted ROI ,text localization and text recognition are conducted to acquire text information. We propose a text localization algorithm by learning gradient features of stroke orientation and distribution of edge pixel in image. We explore user interface issues and access robostness of algorithm in extracting and reading text from different objects with different background.*

I. INTRODUCTION

U. S, the 2008 National Helth Interview Survey reported that an estimated 25.2 million adult Americans (over 8%) are blind and visually impaired . Reading is obviously essential in todays society . Printed text is everywhere in the form of reports, receipts, bank statements, restaurant menus, classroom handouts, product packages, etc The ability of people who are blind or have significant visually impairments to read printed labels and product packages etc.

Today, there are already a few system that have some promise for portable use , but they cannot handle product labeling. For example, portable barcode readers. But a big limitation is that it is very hard for blind users to find the position of barcode and to correctly point the barcode reader at the barcode.

It is challenging problem to automatically localize objects and text ROIs from captured images with complex background, because text in captured images is most likely surrounded by various background outlier “noise” and text characters usually appear in multiple scale, fonts, and colors. For the text orientations, we assumes that text strings in scene images keep approximately horizontal alignment. Many algorithm have been developed for localization of text region.

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II. EXSISTING SYSTEM

Today, there are already a few systems that have some promise for portable use, but they cannot handle product labeling. 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. Such systems integrate OCR software to offer the function of scanning and recognition of text and some have integrated voice output.

Even though a number of reading assistants have been designed specifically for the visually impaired, to our knowledge, no existing reading assistant can read text from the kinds of challenging patterns and backgrounds found on many everyday commercial products. Such as text information can appear in various scales, fonts, colors, and orientations.

Fig.1. Examples of printed text from hand-held objects with multiple colors, complex backgrounds, or non flat surfaces.

III. PROPOSED SYTEMS

To overcome the problems defined in problem definitions and also to assist blind persons to read text from those kinds of challenging patterns and backgrounds found on many everyday commercial products of Hand-held objects, then have to conceived of a camera-based assistive text reading framework to track the object of interest within the camera

view and extract print text information from the object. Proposed algorithm used in this system can effectively handle complex background and multiple patterns, and extract text information from both hand-held objects.

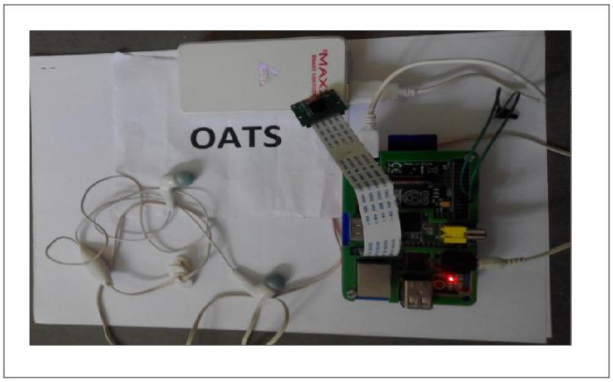

Fig.2 Proposed system.

IV.FRAMEWORK AND ALGORITHM

The system framework consists of three functional components they are:

- Capture Image
- Data Processing and
- Audio Output

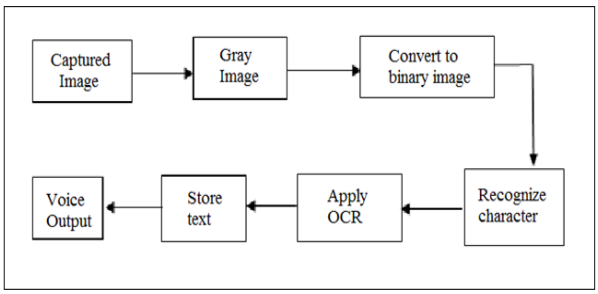

Fig.3 Frame Work

1. Capture the Image through camera.
2. Convert the captured color image into gray scale image using image processing.
3. Then convert the gray image into binary image.
4. Recognize and extract the text from extracted region.
5. Apply OCR (optical character recognisation).
6. Store text and convert it into speech.

ALGORITHM

Step 1: START

Step 2: Capture image through camera.

Step 3: Store and process the image.

Step 4: Apply adaptive thresholding.

Step 5: Convert the color image into binary image.

Step 6: Apply stroke width transformation.

Step 7: Text are extracted and detected.

Step 8: Convert text into speech.

V. TEXT RECOGNITION AND AUDIO OUTPUT

The audio output component is to inform the blind user of recognized text codes in the form of speech or audio. A Bluetooth earpiece with mini microphone or earpiece is employed for speech output. Text recognition is performed by off-the-shelf OCR prior to output of informative words from the localized text region.

VI. PROTOTYPE SYSTEM EVALUATION

The automatic ROI detection and text localization algorithms were independently evaluated as unit tests to ensure effectiveness and robustness of the whole system. We subsequently evaluated this prototype system of assistive text reading using images of hand-held objects captured by ten blind users in person. Two calibrations were applied to prepare for the system test. First, we instructed blind users to place hand-held object within the camera view. Since it is difficult for blind users to aim their held objects, we employed a camera with a reasonably wide angle. In future systems, we will add finger point detection and tracking to adaptively instruct blind users to aim the object. Second, in an applicable blind-assistive system, a text localization algorithm might prefer higher recall by sacrificing some precision.

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