

Portable Camera Based Assistive Text and Product Label Reading from Hand Held Object by using Android App for Blind Pearson

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Abstract— We propose a camera-based mechanical man app. This app helps the blind per-sons to browse the text on explicit object. In this system camera captures the actual text on object. Multiple techniques square measure applied on it text. Such as Optical Character Recognition that supply the operate of scanning and recognition of text and a few have integrated voice output. From a grayscale image, thresholding are often accustomed produce binary pictures i.e. image with solely black or white colors, Filtering are often accustomed cut back the noise of image, Next image segmentation technique is employed to perform the method of partitioning a digital image into multiple segments .The goal of segmentation is to modify and/or amendment the illustration of a picture into one thing that's a lot of significant and easier to analyses. Image scaling is that the method of resizing a digital image. Next technique employed in this project is template matching. Temples matching is a way in digital image process for locating tiny components of a picture that match a template image. Also template extraction are often employed in producing as a vicinity of internal control, some way to navigate a mobile golem or as some way to notice edges in images then finally voice output are going to be generated then blind man will simply listen the text on it explicit object.

Keywords: - *Assistive devices, blindness, distribution of edge pixels, hand-held objects, optical character recognition (OCR), stroke orientation, text reading, and text region localization*

1. INTRODUCTION

The 314 million visually impaired folks worldwide, forty five million square measure blind handicap that was free by “World Health Organization” in ten facts concerning sightlessness. Even during a developed country just like the us, the 2008 National Health Interview Survey (NHIS) reportable that AN calculable twenty five.2 million adult Americans (over 8%) square measure blind. The human baby generation ages square measure quickly increasing. all over written text square measure obtainable as an example receipts, bank statements, building menus, room handouts, report, product packages, directions on medication bottles, room handouts etc. While screen readers, optical aids and

video magnifiers will facilitate blind users and people with low vision to access documents. The few devices offer sensible access to common hand-held objects like product packages and objects written with text as an example prescription medication bottles. The visually handicapped person to scan written labels and merchandise packages can enhance freelance living and foster economic and social self-reliance. Today, there square measure already some systems for transportable use however they can't handle product labeling. The transportable Universal Product Code readers designed to assist blind people identify totally different product in an in depth product info will change user for visually handicapped person to access data regarding these product through speech and Braille. during this system an enormous limitation is that it's terribly exhausting for blind users to seek out the position of the Universal Product Code and to properly purpose the Universal Product Code reader at the Universal Product Code however Some reading-assistive systems like pen scanners could be used in these and similar things. This technique integrates OCR computer code use by perform for scanning and recognition of text and a few have integrated voice output. The OCR is optical character recognition. These systems square measure typically designed and perform best with document pictures with appropriate backgrounds, commonplace fonts, a tiny low vary of font sizes, and well-organized characters. This technique used instead of business product boxes with multiple decorative patterns. The OCR computer code cannot directly handle scene pictures with complicated backgrounds and therefore the document to be scan should be nearly flat, placed on a transparent, dark surface and contain principally text.

Even though variety of reading assistants square measure designed specifically for the blind folks, to our knowledge, there's no existing scanning assistant will read text from the varieties of difficult patterns and Even though variety of reading assistants square measure designed specifically for the blind folks, to our knowledge, there's no existing scanning assistant will read text from the varieties of difficult patterns and backgrounds that found on many everyday business product. Like text data will obtainable in varied scales, fonts, colors, and orientations. Images. Initial is Milk box (Top) and Men lavatory signage (Bottom)



Figure 1. Examples of printed text from hand-held objects with multiple colors backgrounds.

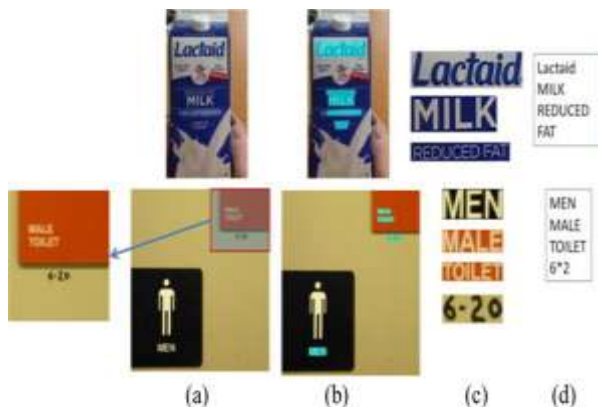


Figure 2. Two examples of text localization and recognition from cameracaptured Images. First is Milk box (Top) and Men bathroom signage (Bottom)

Above diagram shows (a) camera captured images. (b) Localized text regions that show in fig mark blue (c) Text region scropped from image. (d) Text codes recognized by OCR (optical character recognition). Text at the top-right corner of bottom image is shown during a increased callout. Mobile accurately reads black print text on a white background however there some issues to recognizing colored text or text on a colored background. It cannot scan text with complicated backgrounds as a result of they can't simply detected the text from background. Text printed on cylinders with crooked or incomplete pictures as an example as soup cans or medication bottles. These systems require a blind user to manually localize areas of interest and text regions on the objects. As shown in Fig. 1, such text data will appear in multiple scales, fonts, colors. to help blind persons to scan text from hand-held objects, we have planned of a camera-based helpful text reading frame work to track the item of interest at intervals the camera read and extract print text data from the item. the prevailing rule will effectively handle complicated background and multiple patterns and extract text data from each hand-held objects and assemblage as shown in Fig. 2. The hand-held object extract camera image and we tend to develop a motion-based technique to obtain region of interest (ROI) of the

item. During this ROI perform the text recognition technique. The localization of text regions in scene pictures they're divide in 2 classes: rule-based and learning –based. Rule primarily based rule to used component level image process to extract the text data from predefined text layout like character size, ratio ,edge density ,character structure ,color uniformity of text and learning primarily based rule square measure used model text structure and extract representative text options to make text Classifiers.

2. EXISTING SYSTEM

In these days society, there square measure already a couple of systems that square measure moveable use for blind persons. For instance, moveable code readers. The blind those who want to access data regarding these product, the moveable code reader helps the blind individuals to spot totally different product in an intensive product information. However properly position the code reader at the code is incredibly arduous task for blind users.

Con jointly there some system that uses camera-based helpful text reading framework. Foremost object of interest inside the camera read is track so written text data from the item is extracted by this framework. During this framework, the item of interest is positioned at the middle of camera's read. This object ought to be positioned specified, it ought to be seem within the camera read. These wide angles of this camera accommodate the users with solely particular/approximate aim. The system extract hand-held object from the camera image. To get the region of interest (ROI) of the item this framework uses the motion primarily based technique. Then text recognition is performed just for that region of interest (ROI).

Sometimes multiple scales, fonts and colors square measure won't to write the text characters. Conjointly immense quantity noise is contained within the captured pictures that contain text instead of industrial product boxes with multiple ornamental patterns the pictures with straightforward background, commonplace fonts, tiny vary of font sizes and well organized character square measure used for these systems, systems provide



Figure 3. Region of interest

higher performance however scene pictures with advanced backgrounds aren't directly handled some optical character recognition(OCR) software system

3. PROPOSED SYTEMS

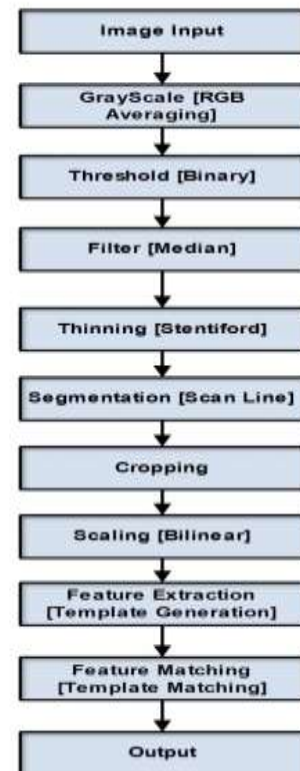
In existing system camera capture the text on image and so process is finished in portable computer and voice output is created however it's not possible for visually handicapped person to hold the portable computer every time. To overcome the matter of existing system the new system is introduced that's transportable camera primarily based

golem app to helps the visually handicapped person. We projected golem app this app facilitate the visually handicapped person to browse the text on explicit object. In this system camera capture the actual text on image and multiple techniques square measure applied on it text and finally voice outputs are generated and so visually handicapped person will simply listen the text on it explicit object.

4. FRAMEWORK AND ALGORITHM



Optical Character Recognition (OCR)



Gray scale:-

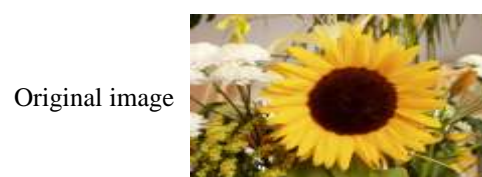
In photography and computing, a grayscale or gray scale digital image is a picture during which the worth of every component could be a single sample, that is, it carries solely intensity data. Pictures of this type, conjointly referred to as black-and-white, area unit composed solely of reminder grey, varied from black at the weakest intensity to white at the strongest.

How does one convert a color image to grayscale? If every color component is represented by a triple (R, G, B) of intensities for red, green, and blue, however does one map that to one range giving a grayscale value? There area unit following 3 algorithms. The lightness methodology averages the foremost distinguished and least distinguished colors: $(\max(R, G, B) + \min(R, G, B)) / 2$. The average

methodology merely averages the values: $(R + G + B) / \text{three}$.

The luminousness methodology could be a additional refined version of the common methodology. It conjointly averages the values, however it forms a weighted average to account for human perception. We're additional sensitive to inexperienced than different colors, therefore inexperienced is weighted most heavily. The formula for luminousness is $0.21 R + 0.71 G + 0.07 B$.

The example sunflower images below



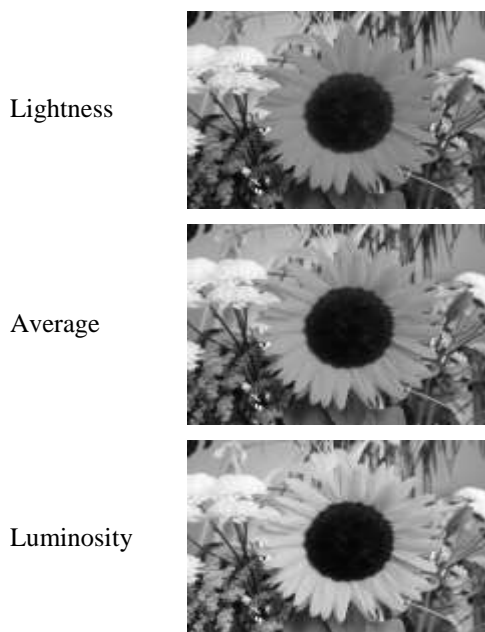


Figure 4. Flower

Threshold

Thresholding is that the simplest methodology of image segmentation.

- From a grayscale image, thresholding is accustomed produce binary pictures i.e. image with solely black or white colours.
- It's typically used for feature extraction wherever needed options of image area unit regenerate to white and everything else to black. (Or vice-versa)

5. CONCLUSION

In this paper we've represented a system that scan written text on hand-held object for aiding visually handicapped person. So as to resolve the common aiming drawback for blind user. We tend to planned mobile app. The mobile camera captured specific image and that we apply the text reconginization on image to extract and localized the written text .we planned OCR software package. This OCR software package performs varied techniques for manufacturing the audio output for the visually handicapped person. Then visually handicapped person simply scan the text from object.

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