

# Information and Assistive System for Blind People Using Image Processing and RFID Technology

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**Abstract:** We proposed a camera based assistive system framework to help blind persons for reading text-labels and the product packaging from hand-held objects in their daily life and blind navigation assist system to get direction using text to speech conversion to show direction in the camera view we first find propose a efficient and effective motion based method to define region of interest (ROI). In extracted ROI, the text localization and recognition are conducted to acquire text information. Text characters are in the localized text regions are binaries and recognized by off shelf optical character recognition software's.

The scene capture component collects the scenes containing the objects of interest in the form of images /video, it corresponds to a camera attached to air of sun glasses . The live is captured by using web cam. The image format from the webcam is in format. The frames from the video segregated and undergone to the pre processing. The data processing component is used for deploying our proposed algorithms, including.

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

## I. INTRODUCTION

The main objective of our project is to detect the region through navigation by extraction by the rfid reader and automatic text extraction by the portable camera based assistive text and product label reading from the hand held objects for the blind person This solves the common aiming problem for blind person In this we will get the output in the form of audio which is very helpful for the blind person and it is very useful in the shopping mall and in the market places

## II. PROPOSED WORK

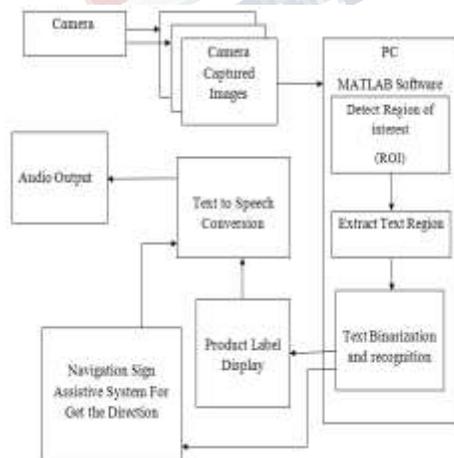
We make a camera based assistive text reading framework to help blind persons read labels and product packaging from hand held object in their day today lives. To isolate the object from clutter backgrounds or other surrounding objects in the camera view. We proposed an efficient and effective motion based method to define a (ROI) in the video by indicating a user to shake the object. This method extracts moving object region by mixture of Gaussians-based background subtraction method

## III. SOFTWARE BEING USED AND BLOCK DIAGRAM

This example depicts how to detect regions in an image that has text. Unstructured scenes are images that contain random scenarios For example you can find and recognize text automatically from the captured video to alert a driver about a road sign. This is different than structured images. Which contains the known scenarios where the position of text is predict before hand

### Step1: Detect Text Regions Using MSER

The MSER feature detector works well for finding the text regions and also it works well for text because the

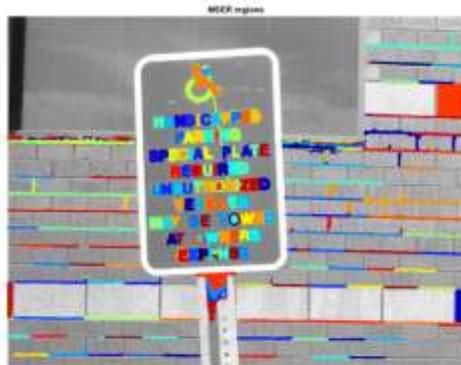


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consistent color & high contrast of text leading to stable intensity profiles

```

Colour Image = imread('handicapsign.jpg');
I = rgb2gray9 (colour Image)= %DETECT,MSER regions.
[mser Region, mserconnsomp]= detectMSERFFeatures(I, ...
'Region Area Range',[200 8000],'ThresholdDelta',4); figure
mishap (I)
holdon          plot(mserRegions,          'showPixelList',
true,'showEllipses',false) title('MSER regions')
holdoff
    
```



**Step2 Remove Non-Text Regions using Basic Geometric properties**

MSER algorithm pick out most of the text, it also detect many stable regions in the image that are not text For example: geometric properties of text can be used to remove non-text regions using simple thresholds, this example is using a simple rule- based approach to filter non- text regions based on geometric properties.

```

% apply regionprops to measure MSER properties
mserStats = regionprops(mserConnComp, 'BoundingBox',
'Solidity', 'Extent', 'Euler', 'Image');
% measures the aspect ratio using bounding box data.
w = bbox(:,3);
h = bbox(:,4);
aspectRatio = w./h;
% Show remaining regions
fig
imshow(I)
holdon
plot(mserRegions, 'showPixelList', true,'showEllipses',false)
    
```

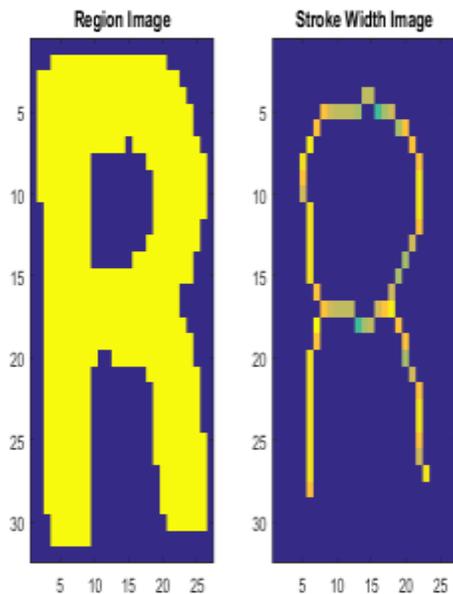
title ('After Removing the Non-Text Regions Based On Geometric Properties') hold off



**Step3: Remove Non –Text on stroke width Variation**

Another method used to differentiate between text and non-text is stroke width. Stroke width is a measure of width of curves and lines that make up a character % during the stroke width computation. `regionImage = mserStats(6).Image; regionImage = padarray(regionImage, [1 1]);`  
 % Show the image region along with stroke width image.  
 Figure subplot(1,2,1) imagesc(regionImage) title('Region Image')

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**Step4 Combine Regions for Final Detection Result**

In this it enables recognition of the actual meaningful information than just the individual letters. For example, recognizing the string 'EXIT' vs the set of individual of the word is lost without the correct ordering.

```
% Get bounding boxes for all the regions
bboxes = vertcat(mserStats.BoundingBox);
% xmaxymax] format for convenience.
xmin = bboxes(:,1);
ymin = bboxes(:,2);
xmax = xmin + bboxes(:,3) - 1;
% Show the expanded bounding boxes
expandedBBboxes = [xminymin xmax-xmin+1 ymax-
ymin+1];
IExpandedBBboxes =
insertShape(colorImage,'Rectangle',expandedBBboxes,'LineW
idth',3);
```

In the images shown above how the stroke width image has very small variation over most of the region  
% Compute the stroke width variation metric  
strokeWidthValues = distance Image(skeleton Image);

```
% Remove regions based on the stroke width variation
mserRegions(strokeWidthFilterIdx) = [];
mserStats(strokeWidthFilterIdx) = [];
```

```
% Show remaining regions
figure
imshow(I)
holdon
plot(mserRegions, 'showPixelList', true, 'showEllipses', false)
title('After Removing Non-Text Regions is Based On Stroke
Width Variation')
holdoff
```



```
% for Creating the graph
g = graph(overlapRatio);
% Remove bounding boxes that contain only one text region
Num Regions In Group = histcounts(componentIndices);
```

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```
Text B Boxes(numRegionsInGroup == 1, :) = [];
% Show the final text result.
ITextRegion = insertShape(colorImage, 'Rectangle',
textBBoxes,'LineWidth',3); figure
imshow(ITextRegion) title('Detected Text')
```



**Step5: Recognize Detected Text Using OCR**

After text regions have been detected, use the ocr function to find the text within each bounding box. Note that w/o first finding the text regions, the output of the ocr function would be more noisy

```
ocrtxt = ocr(I, textBBoxes);
```

```
[ocrtxt.Text]
ans =
```

**IV. HANDICAPPED PARKING SPECIAL PLATE  
REQUIRES UNAUTHORIZEDVEHICLE MAY BE  
TOWE AT OWNER EXPENSE.**

This example showed you how to find the text in an image using the MSER feature detector to first find candidate text regions, and then it describes, how to apply geometric measurements for removing all the non text regions. This example code is a good starting point for making more reliable text detection algorithms.

After using or connecting the arm7 processor and RFID reader and tracker for the tracking purpose and the ultrasonic sensor for obstacle detection the blind person can detect the obstacle and track the places



Fig. Snapshot of our demo system, including three functional components

- ❖ Scene capture
- ❖ Data processing
- ❖ Audio output.

**A. literature overview**

Chucaiyi presented a paper portable camera-Based Assistive Text & product Label Reading From Hand – Held product vision, and portable computers, digital cameras make it feasible to assist these individuals by developing camera-based product that combine computer vision technique with different existing commercial products such optical character recognition (ocr) system Ender Tekin presented a paper An Algorithm Enables Blind Users To Find and Read Barcodes. In which the ability of people who are blind or have visual impairments to read text product packages will enhances the independent living and foster economic and social self- sufficiency novel algorithm for finding and reading ID barcode, intended for use blind and visually impaired users

**V. CONCLUSION**

Thus we have designed the camera based assistive text and product label reading from hand held object using tag and reader.

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