

BUS NUMBER DETECTOR FOR BLIND

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Abstract- In last couple of decades, the plate and convert to speech format. LPR is number of vehicles has increased drastically. used in it. With this increase, it is becoming difficult to

keep track of each vehicle for purpose of transportation independently, the blind use auditory touched clues like walking stick or is that a blind person must come into close proximity with their surroundings to determine the location of an obstacle. The approach mentioned in this project is a histogram based approach. This approach has an advantage of being simple and thus faster. Initially, bus plate localization is implemented using MATLAB and verified for its functionality.

Index Terms- Segmentation, Image to Speech surroundings to determine the location of an obstacle.

In Bangladesh five students made a tool for blind. The tool will detect the obstacle nearby to them. Three sensors are fixed in it straight, left and right which cover approximately 180 degree in front. That result in sound and vibration. The tool can detect up to 3 meters distance there are two types of modes they are observation mode and free mode. In observation mode three sensors are turned on and free mode is only front sensor is active. It has rechargeable battery.

Head phone is connected with the device. few limitation they are

I. INTRODUCTION

It cannot detect object more than 45 World Health Organization has found out about 39 million of people in the world are blind and 246 million of people are low degree angle in the sensors. It cannot detect object closer than 2 cm.

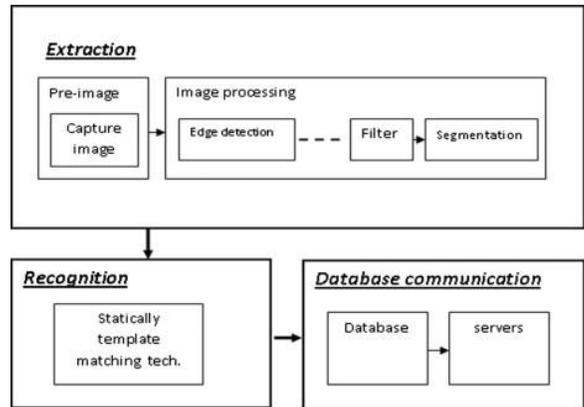
II. EXISTING METHOD

law enforcement and traffic management. This paper outlines a bus detection mechanism for blind in travelling from one The blind use auditory touched clues like walking stick or white cane. The limitation of the walking stick is that a blind person must

place to another. In order to get come into close proximity with their vision. Blind people use stick to walk in road. Blind people get help from other people to cross road, to take bus etc. So we have an idea to help the blind people to get the right bus by themselves. We made a

device that take the snap of the bus number

III. PROPOSED METHOD



The below algorithm is for proposed system.

1. Extraction:



1.1 Pre image

The main aim of this stage is to find There are three types of bus detection in LPR system. They are infrared sensors, image processing method, magnetic loops . Image processing method is used in this technique.

The image is capture from 3m by the camera. rectangles plate of the vehicles. In dilation every background pixel changed into an object pixel.



Here we are going to explain the same principle for car.

The filling holes algorithm used to fill rectangles which result in dilation process. Smoothing the filled image result from filling holes algorithm by eroding it using erosion operation with square structure element to specify the bus plate regions. However there may be more than one region for plate location.

1.2 Image processing

In this stage is divided into two sub stages.

Detection stage

It is very difficult to identify the object within the image. In this stage the capture image of the bus is converted to gray scale image.

(a)Filling image (b) eroding image

Filtering and smoothing eroded image by using 2-D median filter with mask 5×5 then followed by



removing unwanted objects the plate.

Then second part of grey scale is used. Filtering will increases the image and removes unwanted spot. First the outer border is removed then inner part is separated into letters and numbers. Then filtration is done to remove unwanted object.

(a)Smoothing image (b) filtering image

Dilation is used in vertical and horizontal lines to detect the structure of rectangle. Edge detector is done in dilation.



To get the plate region in this phase the other region must be removed. Some tests are applied to the final image.

Rectangle check

Checking that the regions of the plate have rectangle shape by compare white pixels count of the regions to the area with $\pm 5\%$ tolerance.

If count of white pixels $\neq \pm 5\%$ area of the region.

This region maybe Else

This region not a plate



IV. SEGMENTATION

Segmentation is one of the most important elements in automated analysis. In this process the plate is recognized. In segmentation of the plate characters, number plate is segmented into constituent parts obtaining the characters individually. The number plate is divided into three parts, the first part is high prt of the plate region.

The remaining region of the plate is divided vertically into two regions right half contains plate characters and left half contains numbers.

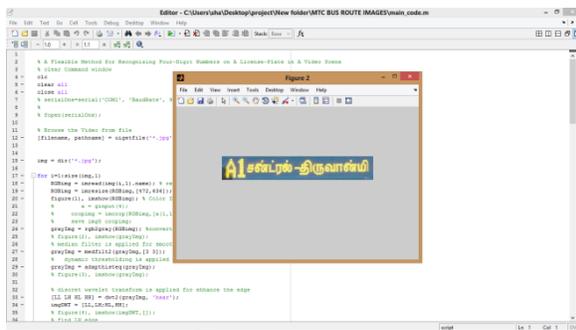
Each of the bus plate regions of the grey scale image and original image is segmented into two parts with a ratio 1:2 from the height. We have to analyzing the first part of the original image using color filter to obtain the type of plate.

$$R(m, n) = \frac{\sum_j \sum_k F_1(j, k) F_2(j - m + (M + 1)/2, k - n + (N + 1)/2)}{\left[\sum_j \sum_k |F_1(j, k)|^2 \right]^{1/2} \left[\sum_j \sum_k |F_2(j - m + (M + 1)/2, k - n + (N + 1)/2)|^2 \right]^{1/2}}$$

Then dilation operation is applied in the image to separate the characters which is close to each other. Then the image is divided into two part with equal size one for characters and other for the letters, this increases the performance of recognition.

2. Character recognition

After segmentation, the letters and numbers are cut into blocks with fixed size. Then the blocks are match with the database characters. The statistical correlation method was used to matching technique. There are two signals are unknowns in the system so cross correlation is used.



Let $F_1(j,k)$ and $F_2(j,k)$ for $1 \leq j \leq J$ and $1 \leq k \leq K$

Represent two discrete images denoting the image to be searched and the template, respectively. The normalized cross correlation between the image pair is defined as:

V. OUTPUT

Application of pattern recognition for Farsi license

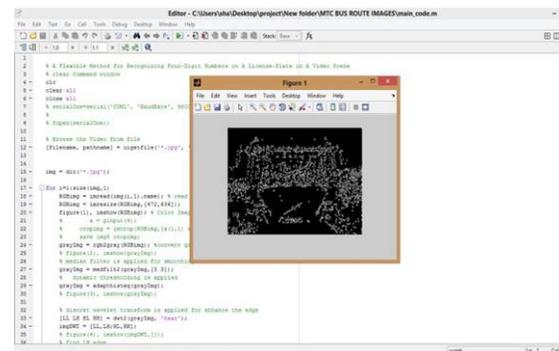


plate recognition

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VI. CONCLUSION

In this project we introduce a new device which convert image to speech, which help the blind people to find bus number. Images are segmented and required data is taken and converted to speech.

In further work it can be used in mobile application which will be useful for blind people.

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