



Vehicle Details Generation System

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Abstract:

In today's era with the increasing amount of vehicles on road, it is almost impossible to keep tabs on the vehicles and enforce the laws. These vehicles have a unique license number written on the license plate. We can maintain the tabs on these vehicles by constant camera surveillance. This paper proposes a technique for discovery and recognizable proof of vehicle licence number. The whole system works around morphological operations and detection methods. Box technique is utilized to identify and isolate the characters. After isolation, layout coordinating is utilized to characterize the characters and distinguish every one of them independently. This gives us the yield in content configuration. The received number plate information is then put into the database and the data about the proprietor is acquired. This system can be useful in the cases of movement reconnaissance, movement identification, vehicle following to enforce laws and traffic rules.

1. INTRODUCTION

Vehicle Licence Plate Numbers are utilized for identification of vehicles all over the globe. Despite the fact that the way it is composed all over the globe changes, it basically comes down to mixes of letters in order and numbers. License Plate Number Detection is a shortsighted picture preparing method to print out/show the characters in the license plate subsequent to handling a given picture. In this paper, otherworldly approach is utilized, as in, picture is obtained, area of intrigue is singled out, characters are portioned. There are likewise calculations which depend on a mix of morphological procedures, division and edge identification. Different strides incorporate enlargement, disintegration, smoothing, and division of characters.

2. METHODOLOGY

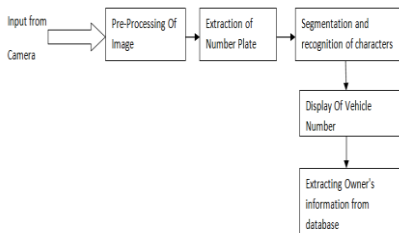


Figure.1. Methodology

3.1. Input from camera

The image captured is of 13 megapixel clarity. It is as shown in Figure.2



Figure.2. Captured Image

3.2. Pre-processing of image

In this step, from the Figure.2, the number plate is extracted and it is sharpened using any available sharpening filters, so that we can clearly recognize all the characters as in Figure.3



Figure.3. Extracted and sharpened number plate

3.3. Extraction of number plate

In this step morphological image processing is done on Figure.4. Then we extract the noise from the image as shown in Figure.5 and subtract it from the Figure.4, so that all the holes that were present in the image get filled and the noises are removed.



Figure.4. Morphological image processing



Figure.5. Extracted Noise



Figure.6 Image after removing noise & filling holes

3.4. Segmentation and recognition of characters

The acquired image Figure.6 obtained from the previous step then goes through the bounding box method. Here, the image is divided with the help of boxes. This is done to identify individual characters. The individual characters are filtered and the area with meaningful letters will be selected as shown in Figure.8



Figure.7. Bounding Box



Figure.8. Data area Selection

3.5. Display of number plate

Finally, template matching is used to convert the recognized characters to a string of characters.

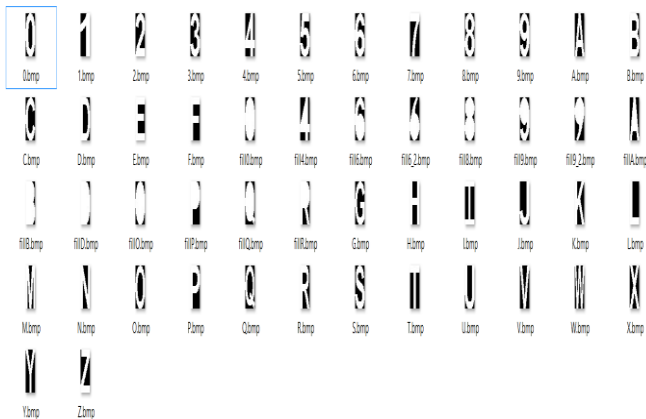


Figure.9. Template Matching

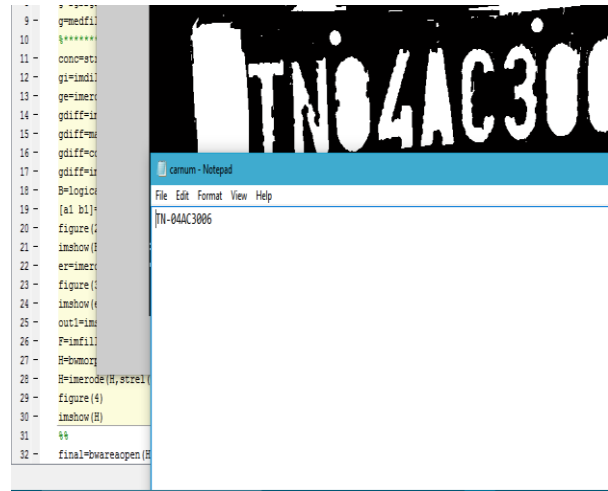
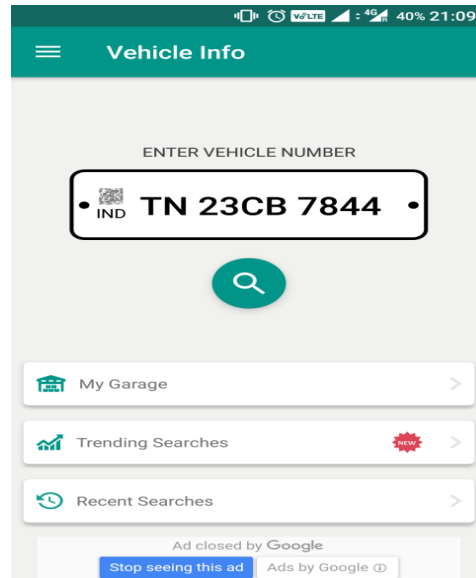


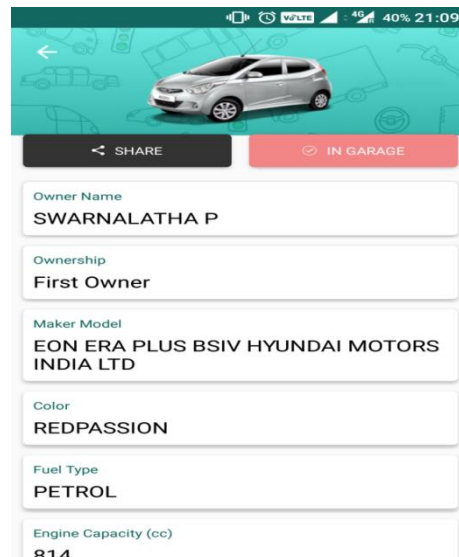
Figure.10. Number plate detection

3.6. Extracting Owner Information

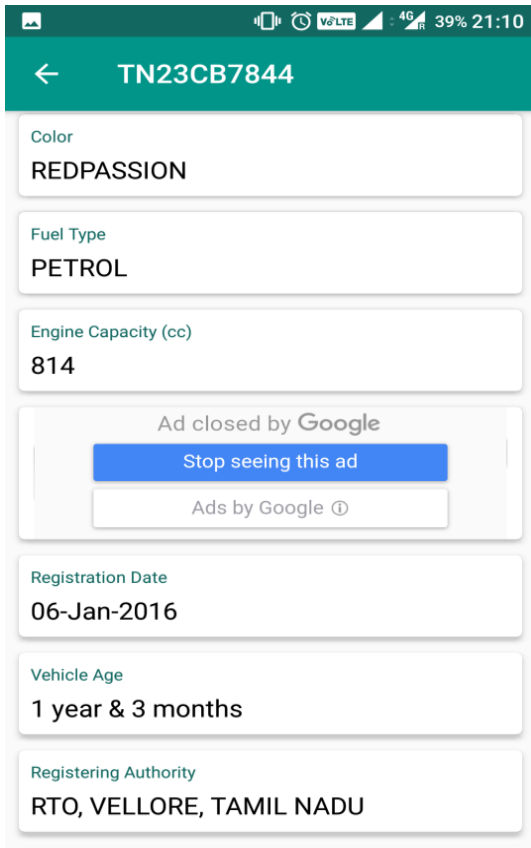
The obtained text in Figure.10 in the form of text document is then put in as an input in the existing database app to extract the information about the vehicle and its owner. Like the owner name, owner ship, maker model, color, fuel type, engine capacity, registration date, registration authority, vehical age, Chasis Number and vehical class



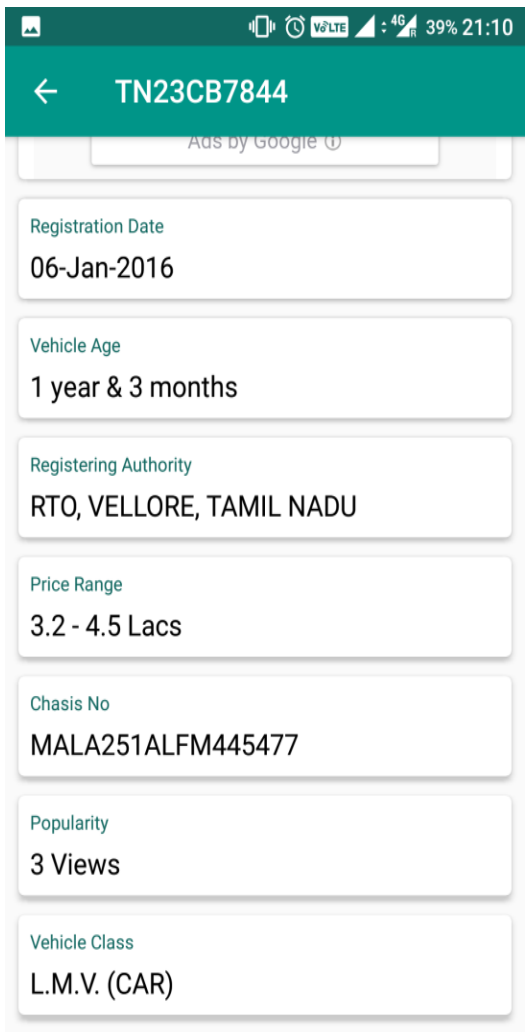
(a)



(b)



(c)



(d)

Figure.11. (a)(b)(c)(d) Extracting owner information

3. ALGORITHM

Algorithm 1: Vehicle Details Generation
Algorithm

Input : Car image (.jpg) : Label
Output : Text numbers : Text Document

begin

Step 1: Perform morphological image processing

```

conc=strel('disk',1)
gi=imdilate(g,conc)
ge=imerode(g,conc)
gdiff=imsubtract(gi,ge)
gdiff=mat2gray(gdiff)
gdiff=conv2(gdiff,[1 1;1 1])
gdiff=imadjust(gdiff,[0.5 0.7],[0 1],1)
B=logical(gdiff)
[a1 b1]=size(B)

```

Step 2: Filling the object

```

out1=imsubtract(B,er)
F=imfill(out1,'holes')
H=bwmorph(F,'thin',1)
H=imerode(H,strel('line',3,90))
imshow(H)

```

Step 3: Data storage section

```

final=bwareaopen(H,floor((a1/15)*(b1/15)));
final1=floor(.9*a1),1:2)=1;
final(a1-1:(a1-20),b1-1:(b1-2))=1;
yyy=template(2);
figure(5)
imshow(final)
Iprops=regionprops(final,'BoundingBox','Image');
for fy=0 towindowheightdo
    rectangle('Position',Iprops(n).BoundingBox,'EdgeColor','g','LineWidth',2);
end
NR=cat(1,Iprops.BoundingBox);
[r tb]=connn(NR)

```

Step 4: Area Selection

```

for ~isempty(r)
    xlow=floor(min(reshape(tb(:,1),1,[])));
    xhigh=ceil(max(reshape(tb(:,1),1,[])));
    xadd=ceil(tb(size(tb,1),3));
    ylow=floor(min(reshape(tb(:,2),1,[])));
    yadd=ceil(max(reshape(tb(:,2),1,[])));
    final1=H(ylow:(ylow+yadd+(floor(max(reshape(tb(:,2),1,[])))/ylow)),xlow:(xhigh+xadd));
    [a2 b2]=size(final1);
    final1=bwareaopen(final1,floor((a2/20)*(b2/20)));
    imshow(final1)
end

```

```

Iprops1=regionprops(final1,'BoundingBox','Image');
NR3=cat(1,Iprops1.BoundingBox);
I1={Iprops1.Image};

```

Step 5 Car number text

```

if (size(NR3,1)>size(tb,1))
[r2 to]=connn2(NR3);
for i=1:size(Iprops1,1)
    ff=find(i==2);
    if ~isempty(ff)
        N1=I1{1,i};
        letter=readLetter(N1,2);
    else
        N1=I1{1,i};
        letter=readLetter(N1,1);
    end
    if ~isempty(letter)
        carnum=[carnum letter];
    end
end
end

```

end

4. RESULTS

The conceived technique works faultlessly and can be utilized as a part of areas where license plate, as well as any type of content that needs acknowledgment is present. The applications like, Access control, Tolling, Public place stopping and so on can be considered things of past. This system is the new generation's evolution.

5. LIMITATIONS



Figure.12. Stylish Number plate

Despite the fact that the strategy appears to unravel any vehicle details easily, it has its restrictions. For instance, if the number plate is broken or not all around kept up, or if there is no significant distinction between comparative characters like, O and D, * and B, O and 0, identification won't not be as perfect of course. Also, the number plate should be in a standard format not any styles or design for the system to detect it. For example the system won't be able to detect the Figure.12

7. REFERENCES

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