SEGMENTED IMAGE COMPRESSION USING 2D-DCT

Abstract— **In recent years, with the development of computer technology, the development of computer vision has made great progress. Computer vision has also brought advanced technology for digital image processing. Digital image processing has developed from such disciplines as data processing and automatic control to the field of image acquisition research, such as image transmission, storage, conversion, display, understanding and development into a new discipline.**

Index Terms—

I. LITERATURE SUMMARIES:

Tai K. The application of digital image processing technology in glass bottle crack detection system

This paper aimed to establish a glass bottle crack detection system based on digital image processing to help manufacturers improve the quality of products. The noise of the picture was suppressed and the edge of the image was smoothed by means of averaging and median filtering. Then we drew grey histogram to set the threshold, and made binarization processing of the image. Finally, the crack on the binary image was detected and judged to obtain the result that whether the glass bottle had cracks.

taimori A, Razzazi F, Behrad A, et al. A novel forensic imageanalysis tool for discovering double JPEG compression

This paper introduced a novel and robust forensic image analysis tool in order to discover the traces left by double JPEG compression.t proposed a dimensionality reduction algorithm dedicated to the information visualization task. Our visualizer consists of a combination of linear and nonlinear schemes which discovers the complex structure of single/double compressed data better than the modern techniques.The results revealed that utilizing coder information and behavior for discovering double compression traces can considerably improve the performance in comparison to other methods. This intuition may encourage a trend toward advising source coder-specific mechanisms to approach an appropriate court-friendly performance.

Coronel L, Badoy W, Namoco C. Identification of an efficient filtering-segmentation technique for automated counting of fish fingerlings

Combination A (Local Normalization and Iterative Selection) provides significantly very high in correcting nonuniform lighting in an image, noise reduction and feature identification compare with other combinations of filtering and segmentation techniques.

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In terms of counting accuracy, Combination A obtained an average Precision, Recall and F measure of as high as 99.80%, 97.90% and 98.83% which outperformed other combinations, respectively.

Mi C , Zhang Z , He X , et al. Two-stage classification approach for human detection in camera video in bulk ports.

the first stage classification has a greater detection

accuracy than the second-stage classification, which means F&B posture human has more specification HOG features than

side human. Thee two-stage classification method proposed in this paper has a detection accuracy of more than 97%,

which is higher than using traditional SVM. In conclusion, the improved classification approach purposed in this paper is more feasible and advanced

PROBLEM IDENTIFICATION:

- With the development of science and technology,image processing technology has been applied in many fields.image segmentation technology in digital imaging has good applications in transportation, biomedical, remote sensing engineering, fire prediction and detection.
- However, there are some problems in the application of digital image segmentation technology, such as wide frequency, low compression data and limited processing speed.

II. EXISTING MODEL:

The current existing model includes only the image segmentation process which is helpful in

segmenting the image by outlining the darkest parts of the image and assigning them the white

colour and the remaining image as black. Segmentation of image has various application in today's

modern world as it can be used in the following places-

1. Health sector- the image of a brain can be taken to identify various chronic diseases like

brain tumour, cancer, etc.

2. Number plate- the number plates can be segmented and only the necessary information can

be extracted. This not only helps in extracting the useful information but also helps in storing

more images in a limited space.

III. PROPOSED MODEL:

Tough the image segmentation has various applications and benefits it lacks at a few aspects i.e.

The size of a segmented image can further be compressed and the process can be made faster.

In this paper we have proposed a better compression technique to tackle one of its drawbacks,

We have used a lossless technique to compress the image obtained. The technique used is 2D-DCT

transform.

Source code-

Matlab code for image segmentation

```
close all;
clear all;
clc
%Gray level Thresolding
a=imread(&#39;b.jpg&#39;);
level=graythresh(a);
c= im2bw(a,level);
subplot(1,2,1), imshow(a),title(&#39;original image&#39;);
subplot(1,2,2), imshow(c),title(&#39;threshold image&#39;);
%edge detection
a=imread(&#39;jump.jfif&#39;);
a=rgb2gray(a);
c=edge(a,&#39;roberts&#39;);
d=edge(a,&#39;sobel&#39;);
e=edge(a,&#39;prewitt&#39;);
f=edge(a,&#39;canny&#39;);
g=edge(a,&#39;log&#39;);
subplot(2,3,1), imshow(a),title(&#39;original image&#39;);
subplot(2,3,2), imshow(c),title(&#39;roberta image&#39;);
```

REFERENCES

```
clc;
clear all;
close all;
I = imread(&#39;lena512.jpg&#39;);
figure, imshow(I);
% Y = I;
YCbCr = rgb2ycbcr(I);
figure, imshow(YCbCr);
Y = YCbCr(:,:, 1);
figure, imshow(Y);
[h, w] = size(Y);
r = h/8;
c = w/8;
s = 1;
q50 = [16 11 10 16 24 40 51 61;
       12 12 14 19 26 58 60 55;
       14 13 16 24 40 57 69 56;
       14 17 22 29 51 87 80 62;
       18 22 37 56 68 109 103 77;
       24 35 55 64 81 104 113 92;
       49 64 78 87 103 121 120 101;
       72 92 95 98 112 100 103 99];
% COMPRESSION
for i=1:r
    e = 1;
    for j=1:c
        block = Y(s:s+7,e:e+7);
        cent = double(block) - 128;
        for m=1:8
            for n=1:8
                if m == 1
                    u = 1/sqrt(8);
                else
                    u = sqrt(2/8);
                end
                if n == 1
                    v = 1/sqrt(8);
                else
                    v = sqrt(2/8);
                end
                comp = 0;
                for x=1:8
                    for y=1:8
                      comp = comp + cent(x, y)*(cos((((2*(x-
1))+1)*(m-
  1)*pi)/16))*(cos((((2*(y-1))+1)*(n-1)*pi)/16));
                    end
                end
                  F(m, n) = v*u*comp;
              end
          end
          for x=1:8
              for y=1:8
                  cq(x, y) = round(F(x, y)/q50(x, y));
              end
          end
          Q(s:s+7,e:e+7) = cq;
          e = e + 8;
      end
      s = s + 8;
  end
% % % % % % % % % % % % % % % %
% % DECOMPRESSION
% % % % % % %
s = 1;
for i=1:r
    e = 1;
    for j=1:c
        cq = Q(s:s+7,e:e+7);
        for x=1:8
            for y=1:8
                DQ(x, y) = q50(x, y)*cq(x, y);
            end
        end
         for m=1:8
```

```
            for n=1:8
                if m == 1
                    u = 1/sqrt(8);
                else
                    u = sqrt(2/8);
                end
                if n == 1
                    v = 1/sqrt(8);
                else
                    v = sqrt(2/8);
                end
                comp = 0;
                for x=1:8
                    for y=1:8
                                comp = comp + u*v*DQ(x,
y)*(cos((((2*(x-1))+1)*(m-
  1)*pi)/16))*(cos((((2*(y-1))+1)*(n-1)*pi)/16));
                    end
                end
                  bf(m, n) = round(comp)+128;
              end
            end
            Org(s:s+7,e:e+7) = bf;
            e = e + 8;
        end
        s = s + 8;
    end
  imwrite(Y, &#39;F:\workouts\phd\jpeg\input.jpg&#39;);
  imwrite(uint8(Org), &#39;F:\workouts\phd\jpeg\output.jpg&#39;);
```


REFERENCES:

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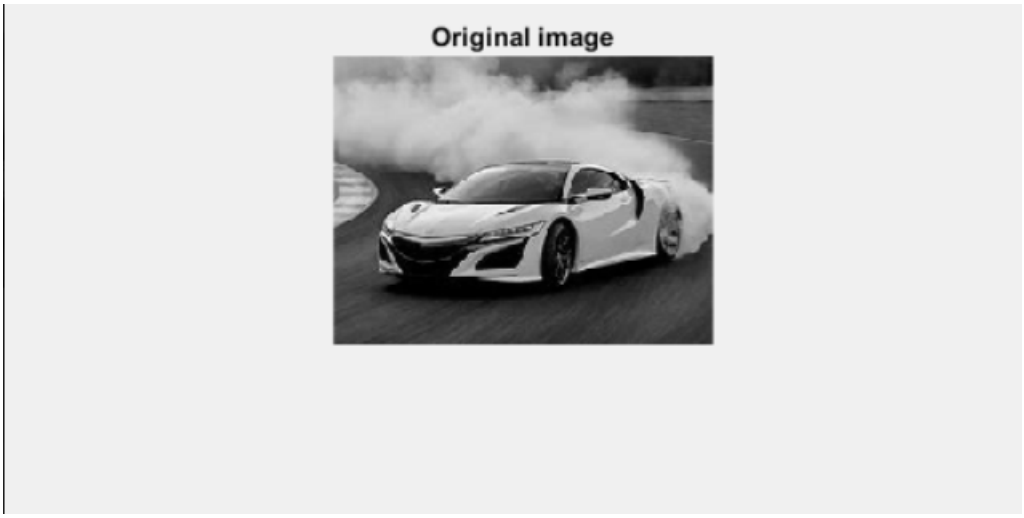
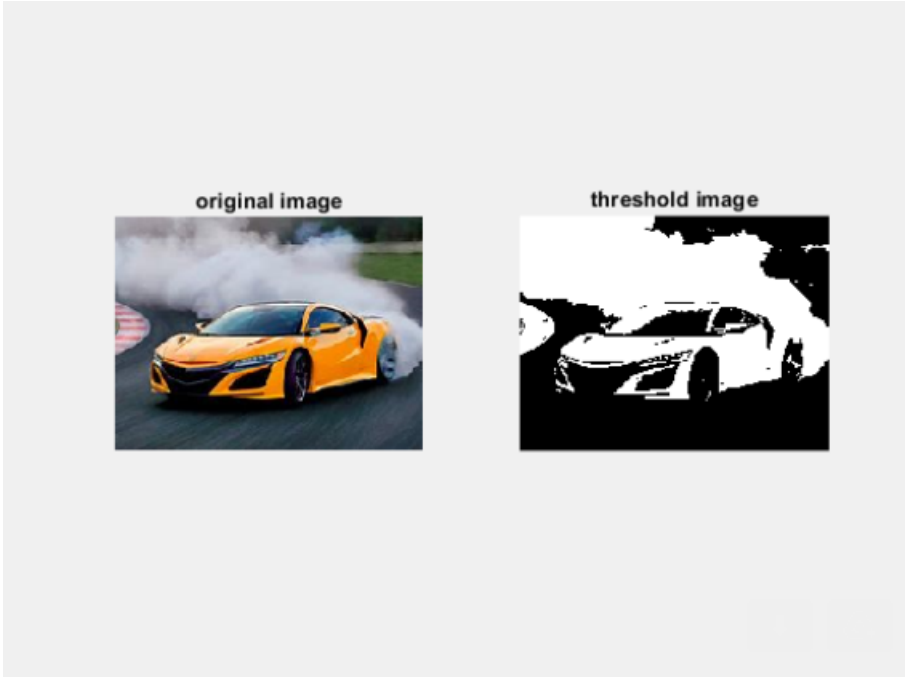
- Wang Wei, Zeng Xiaoneng. Research and application of image segmentation technology. Computer Age, no. 001, pp. 26-28, 2015.

OUTPUTS:


Original image

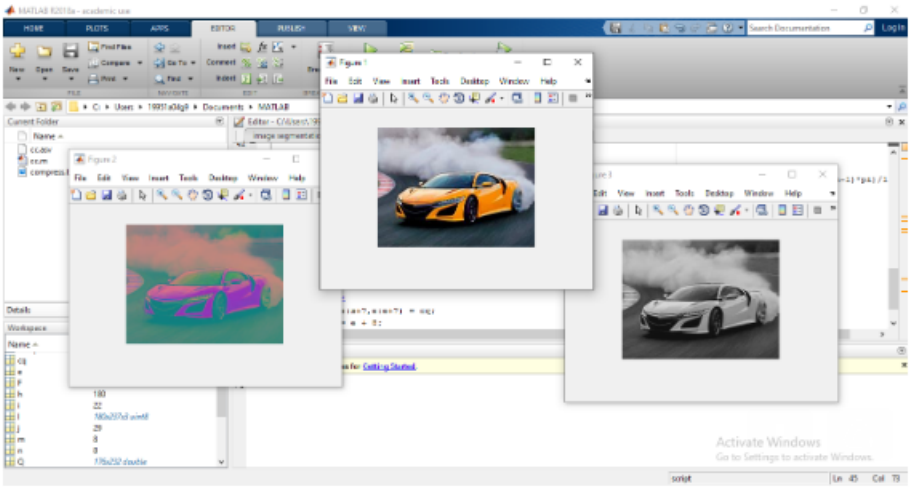

original image
threshold image

Original image

threshold image

DCT Compress Image

threshold image




original image
threshold image