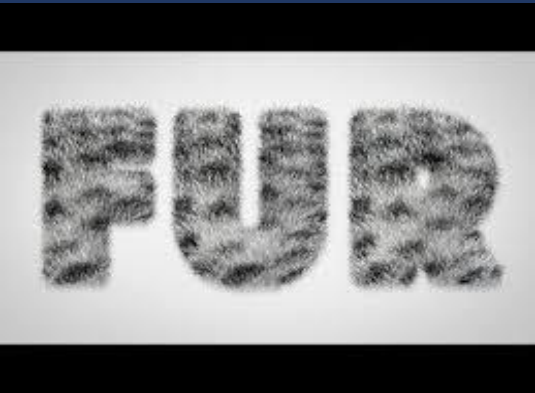


# Scene Text Detection and Recognition under Texture Text Images

|            |             |          |
|------------|-------------|----------|
| Tanakit    | Intaniyom   | 60070141 |
| Phandit    | Chantanam   | 60070149 |
| Warinthorn | Thananaporn | 60070156 |

CANDY  
CANES

RSD



**PLAN A**

---



```

clear all;
close all;

%f = rgb2gray(imread('Image07.jpg'));      % WORDS DON'T FIT PICTURE
%f = rgb2gray(imread('Image22.jpg'));      % COMING SOON
%f = rgb2gray(imread('texture text.jpg'));  % GRAPHIC MAC
%f = rgb2gray(imread('TextureText02.jpg')); % PSD
%f = rgb2gray(imread('TextureText03.jpg')); % EARTH
%f = rgb2gray(imread('TextureText04.jpg')); % FUR
%f = rgb2gray(imread('TextureText07.jpg')); % CANDY CANE

%figure, imshow(f);
f = imadjust(f, [0.001 0.9]);
%figure, imshow(f);
K = wiener2(f, [5 5]);
K = medfilt2(K);

%-----freq fiilter-----%
PQ = paddedsize(size(K));
Do = 0.1* PQ(1);
hp = hpfilter('gaussian', PQ(1), PQ(2), Do, 2);
lp = lpfilter('btw', PQ(1), PQ(2), Do, 2);
%ghf = dftfilt(double(K), hp); %hipass
ghf = dftfilt(double(K), lp); %lowpass
ghfscale = gscale(ghf);
figure, imshow(ghfscale);

%-----recon smooth-----%
se = strel('disk', 5);
fe = imerode(ghfscale, se);
fobr = imreconstruct(fe, ghfscale);

fobrc = imcomplement(fobr);
fobrce = imerode(fobrc, se);
fobrce = imcomplement(imreconstruct(fobrce, fobrc));
figure, imshow(fobrce);

```

```

%-----top hat-----%

se = strel('disk', 25);
toph = imtophat(fobrce, se);
%figure, imshow(toph);

g_obr = imreconstruct(imerode(toph, ones(1, 20)), toph);
g_obrd = imdilate(g_obr, ones(1, 50));
f2 = imreconstruct(min(g_obrd, toph), toph);
figure, imshow(f2);

%----binarize----%

nf2 = imbinarize(f2, 'global');
figure, imshow(nf2);

num = size(nf2);
c = ones(num) - nf2;
figure, imshow(c);

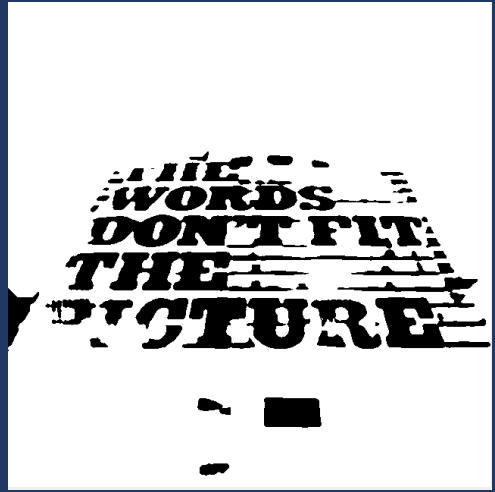
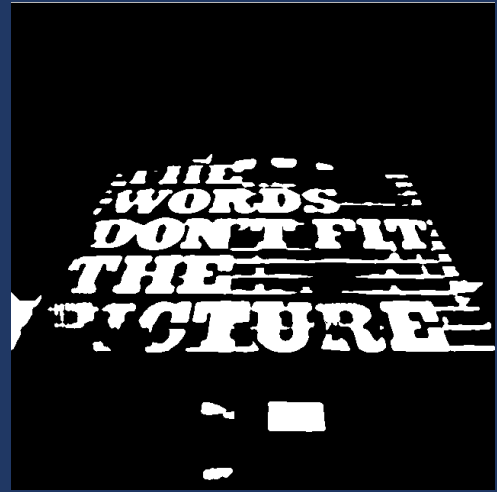
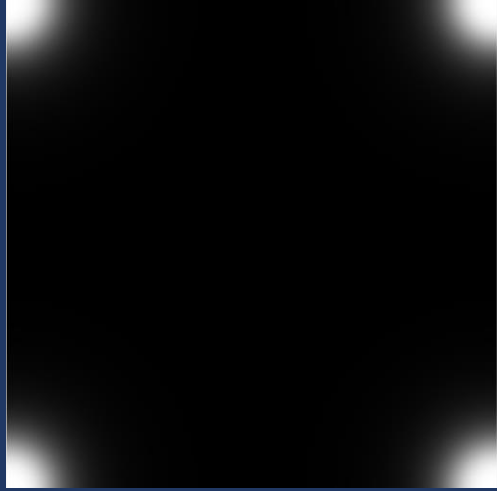
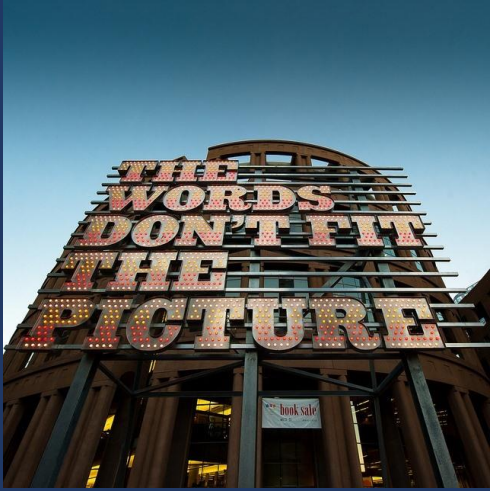
c2 = imbinarize(c, 'global');
figure, imshow(c2);

ocrr = ocr(c2, 'TextLayout', 'Block')
Iocr = insertObjectAnnotation(f, 'rectangle', ...
                             ocrr.WordBoundingBoxes, ...
                             ocrr.WordConfidences);

figure; imshow(Iocr);

ocrr.Text

```

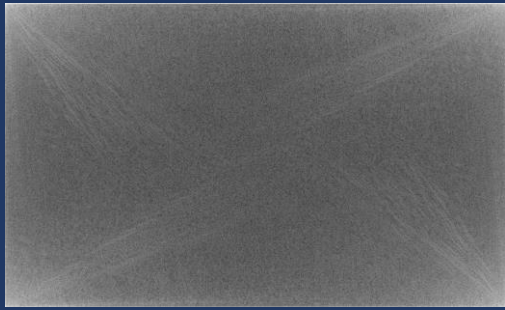




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lI:E"—i\"\*-'  
rvrazunfi  
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| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| THE               | 0.50437    |                 | 0                |
| WORDS             | 0.50437    |                 | 0                |
| DON'T             | 0.60145    |                 | 0                |
| FIT               | 0.60145    |                 | 0                |
| THE               | 0.60145    |                 | 0                |
| PICTURE           | 0.50559    |                 | 0                |
| Average           | 0.55311333 |                 | 0                |





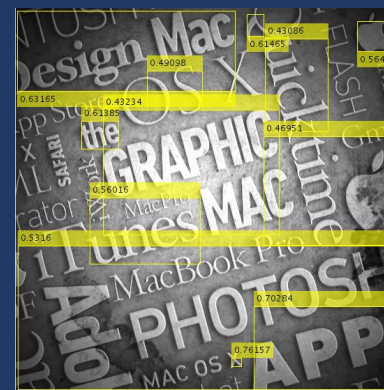
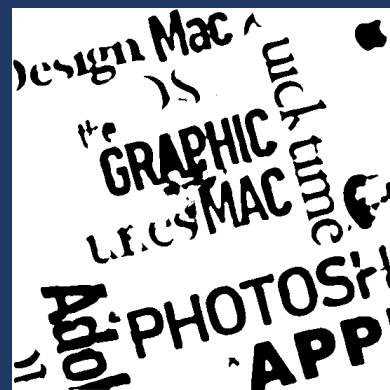
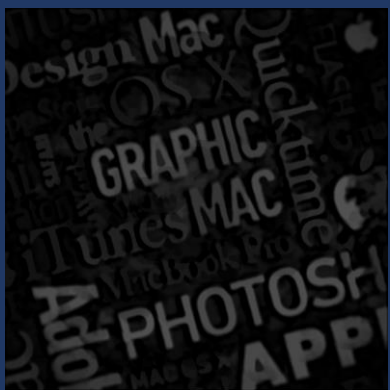
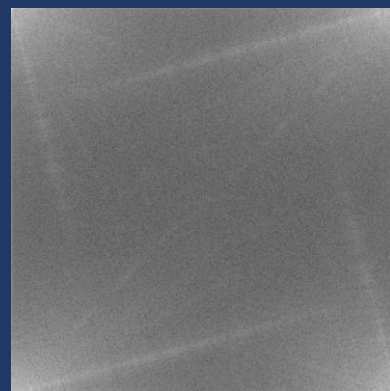
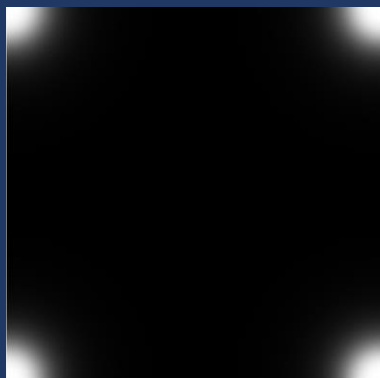


| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| COMING            | 0.54915    |                 | 0                |
| SOON              | 0.54915    |                 | 0                |
| Average           | 0          |                 | 0                |

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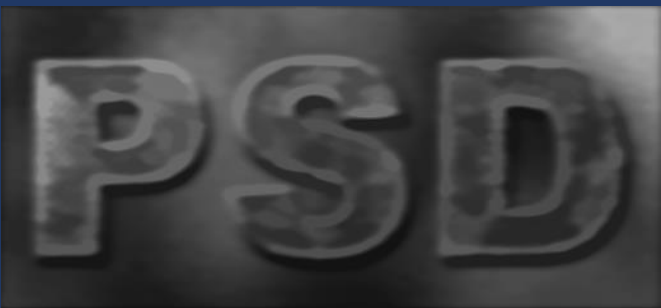
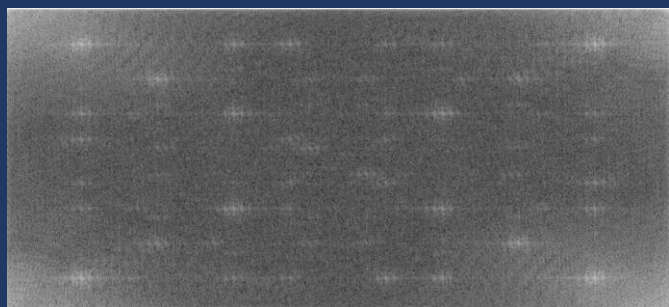
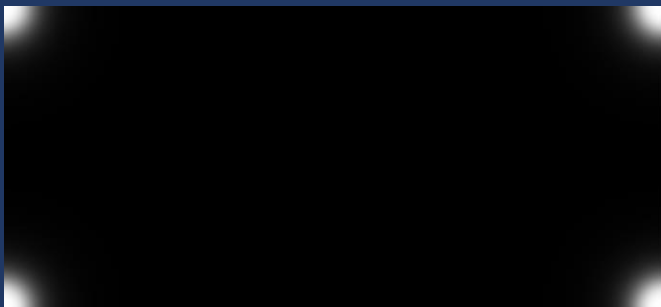




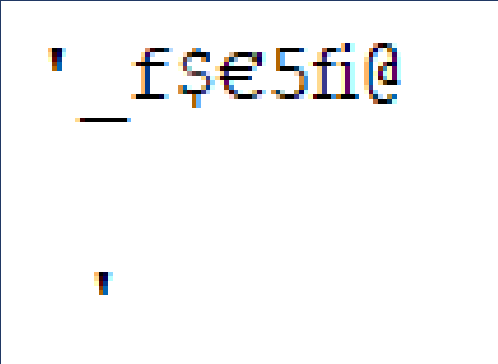
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```

| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| DESIGN            | 0.63165    |                 | 0                |
| MAC               | 0.63165    |                 | 0                |
| OS X              | 0.49098    |                 | 0                |
| THE               | 0.61385    |                 | 0                |
| GRAPHIC           | 0.43234    |                 | 0                |
| MACPRO            | 0.56016    |                 | 0                |
| ITUNES            | 0.56016    |                 | 0                |
| MACBOOK PRO       | 0.5316     |                 | 0                |
| PHOTOS            | 0.5316TOS  |                 | 50               |
| APP               | 0.70284APP |                 | 100              |
| QUICKTIME         | 0.43086    |                 | 0                |
| FLASH             | 0          |                 | 0                |
| STORE             | 0          |                 | 0                |
| Average           | 0.47059154 |                 | 11.53846154      |

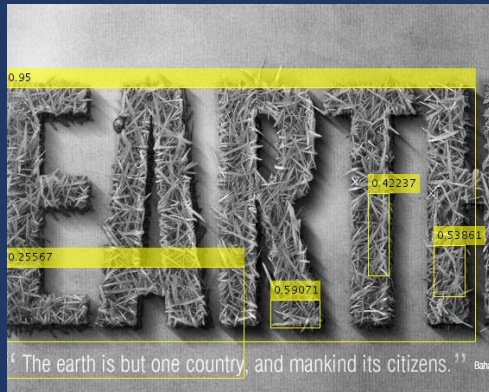
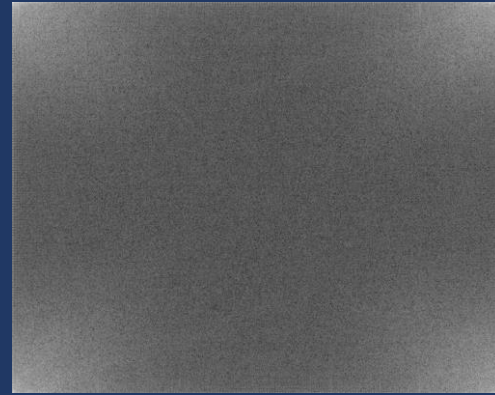




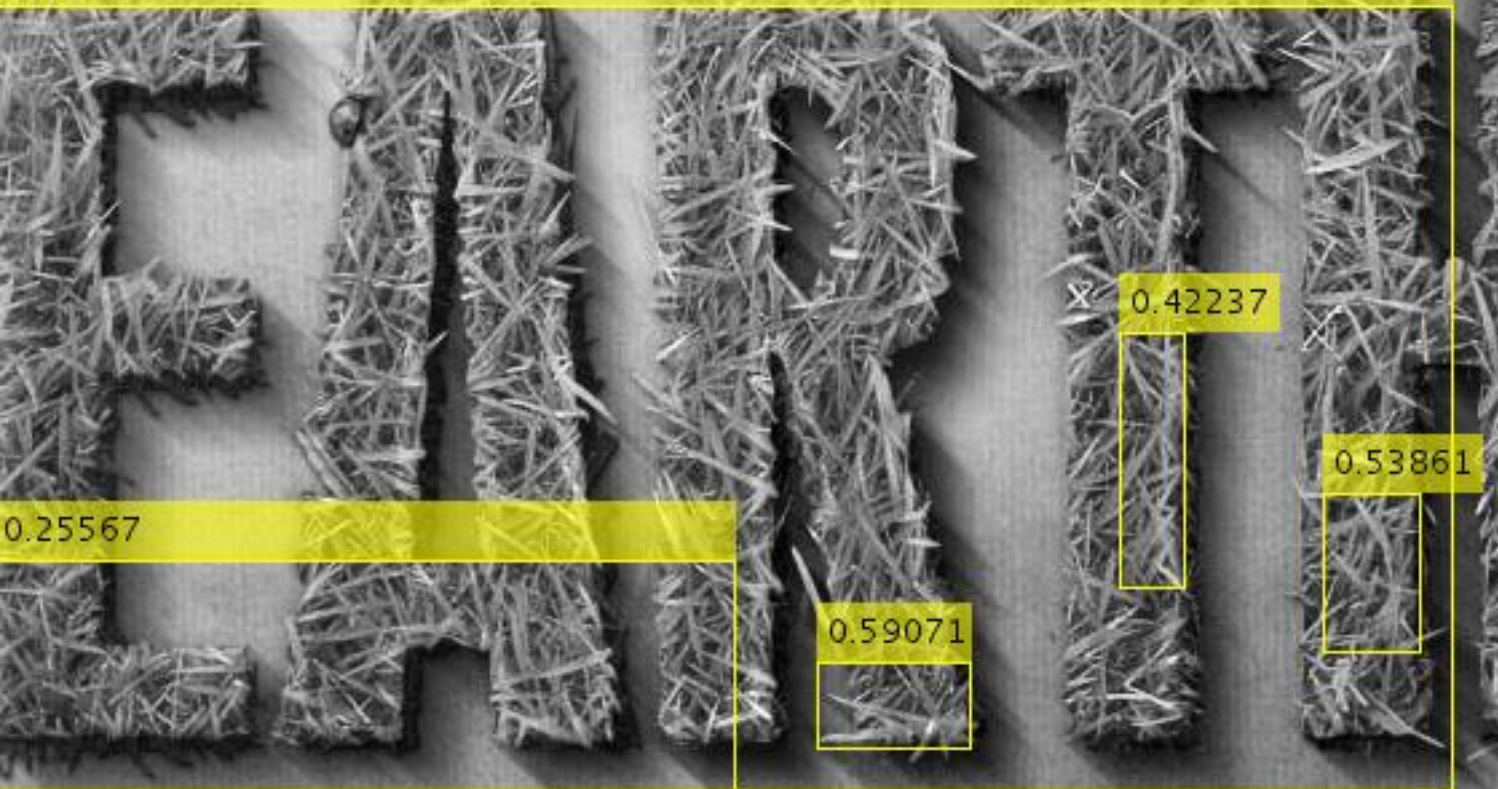




| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| PSD               | 0          |                 | 0                |
| Average           | 0          |                 | 0                |



0.95

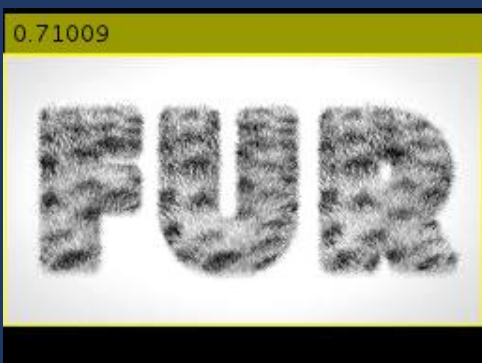
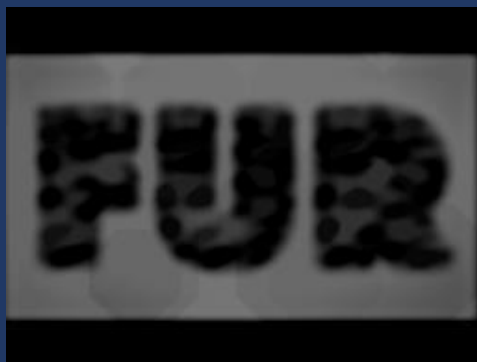
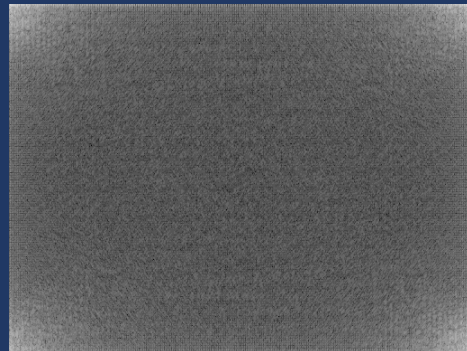
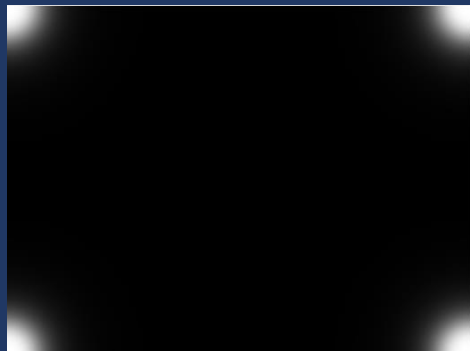
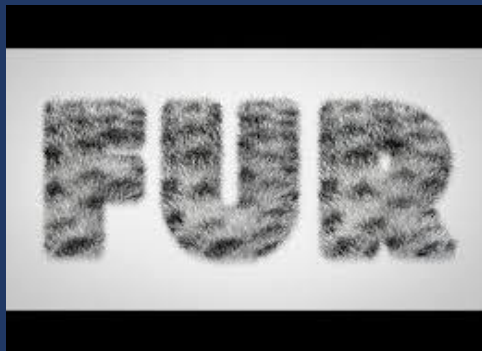


“The earth is but one country, and mankind its citizens.” Baha

| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| EARTH             | 0.95       |                 | 0                |
| Average           | 0.95       |                 | 0                |

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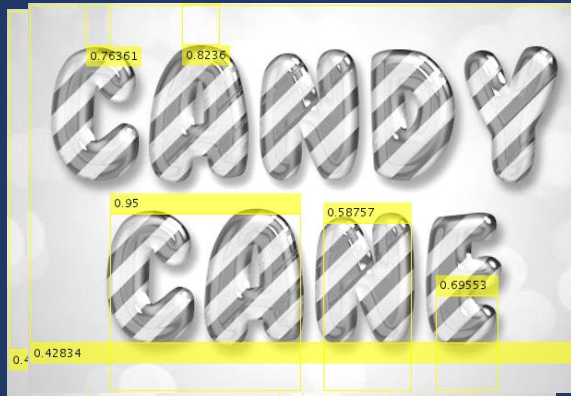
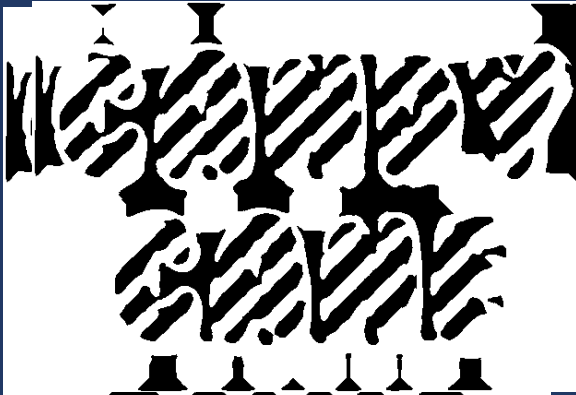
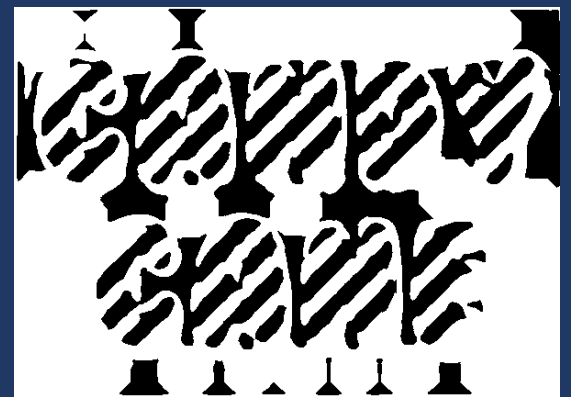
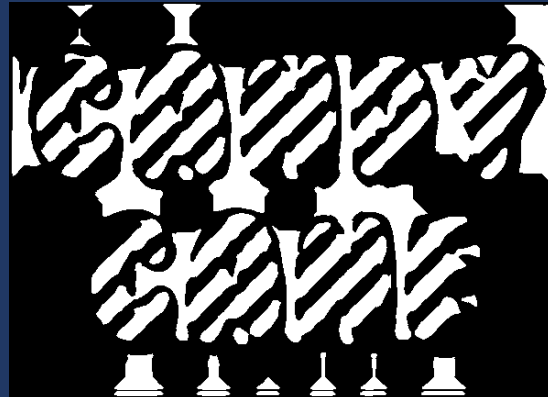
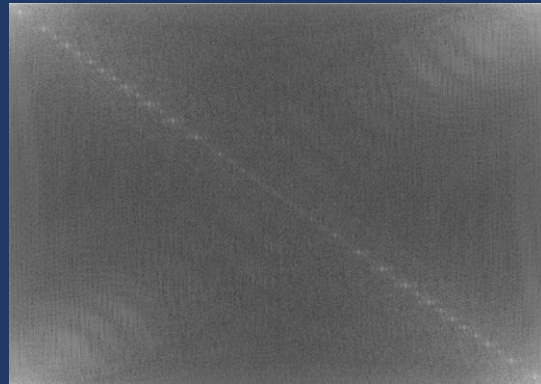
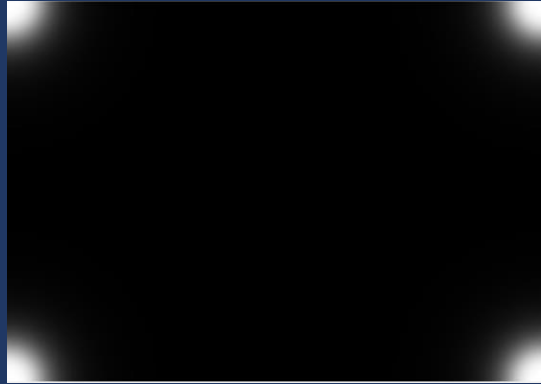
0.71009

FUR

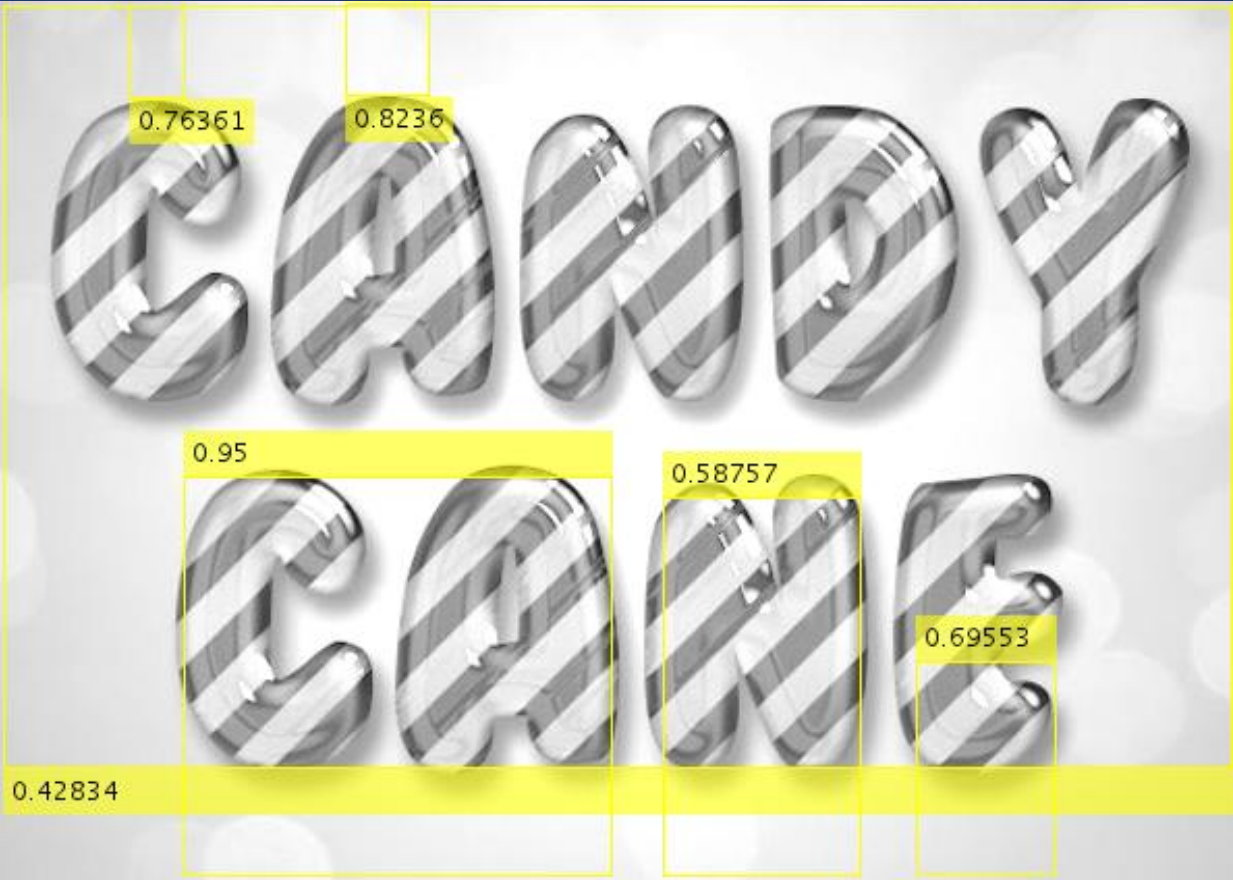
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| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| FUR               | 0.71009    | [ED             | 0                |
| Average           | 0          |                 | 0                |







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| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| CA                | 0.95       |                 | 0                |
| N                 | 0.58757    |                 | 0                |
| Average           | 0.768785   |                 | 0                |

**PLAN B**

---

```

clear all;
close all;
clc;

% To gray scale Image -----
%f = rgb2gray(imread('Image07.jpg'));      % WORDS DON'T FIT PICTURE
%f = rgb2gray(imread('Image22.jpg'));      % COMING SOON
%f = rgb2gray(imread('texture text.jpg')); % GRAPHIC MAC
%f = rgb2gray(imread('TextureText02.jpg')); % PSD
%f = rgb2gray(imread('TextureText03.jpg')); % EARTH
%f = rgb2gray(imread('TextureText04.jpg')); % FUR
%f = rgb2gray(imread('TextureText07.jpg')); % CANDY CANE

figure(1); imshow(f); title("Input (Grayscale)");

```

```

% Entropy -----
ef = entropyfilt(f);
efg = mat2gray(ef);
figure(2); imshow(efg); title("Entropy setup");

% Convert to Binary Image -----
bw = imbinarize(efg, 0.8);
bw2 = ~bw;
figure(3); imshow(bw); title("BW Image 1");
figure(4); imshow(bw2); title("BW Image 2");

% Fill Image -----
f_fill = imfill(bw, 'holes');
figure(5); imshow(f_fill); title("Fill Image")

```

```

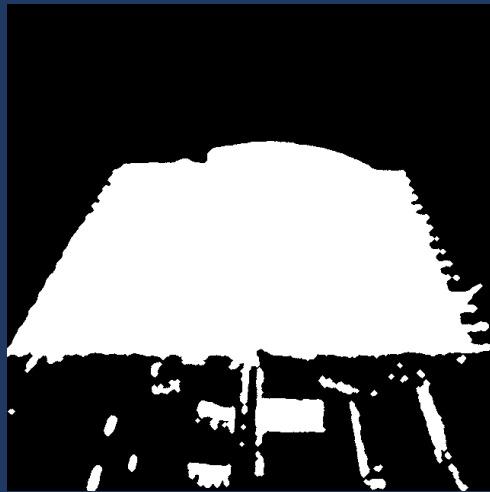
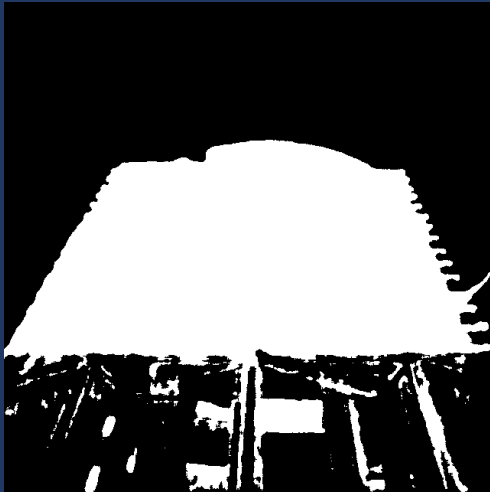
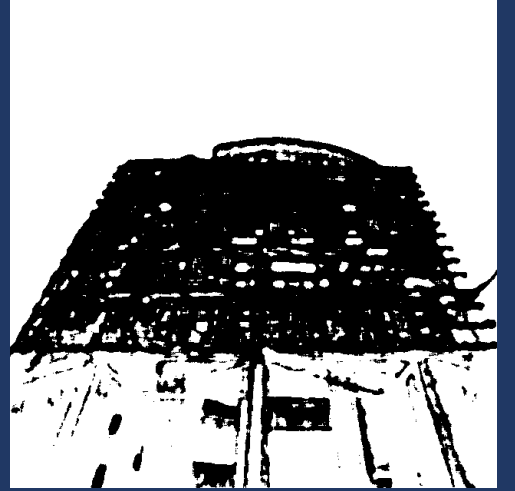
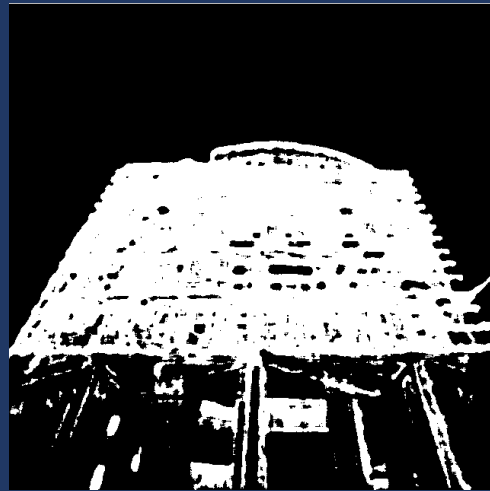
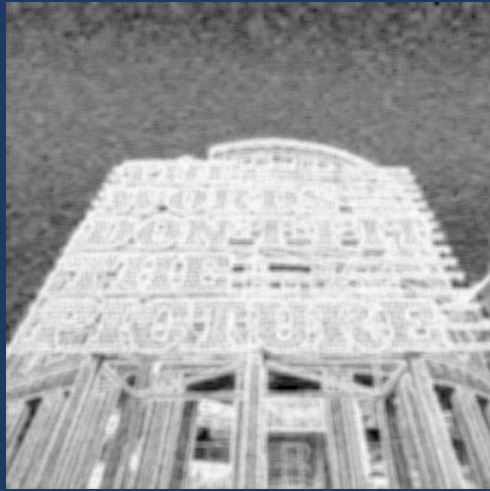
% Top hat -----
sel = strel('diamond', 3);
f_tophat = imopen(f_fill, sel);
figure(7); imshow(f_tophat); title("Top hat");

% OCR -----
ocrr = ocr(f_tophat, 'TextLayout', 'Block')
Iocr = insertObjectAnnotation(f, 'rectangle', ocrr.WordBoundingBoxes, ocrr.WordConfidences);
figure(10); imshow(Iocr);

ocrr.Text

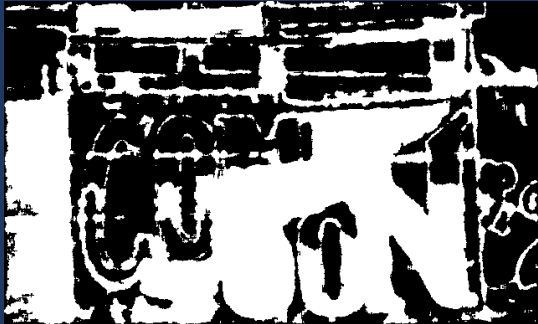
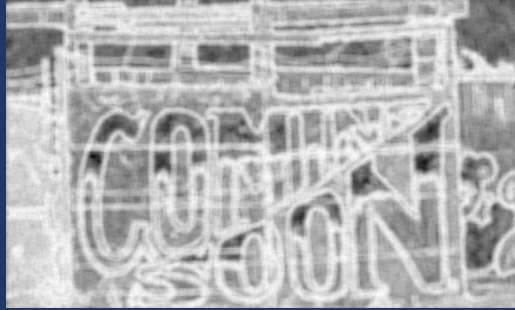
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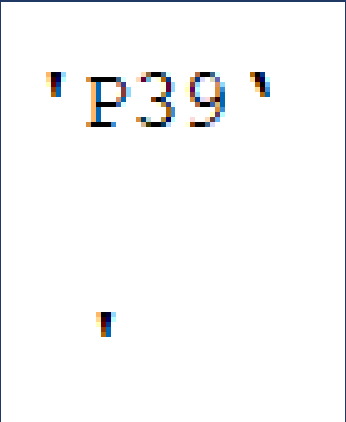




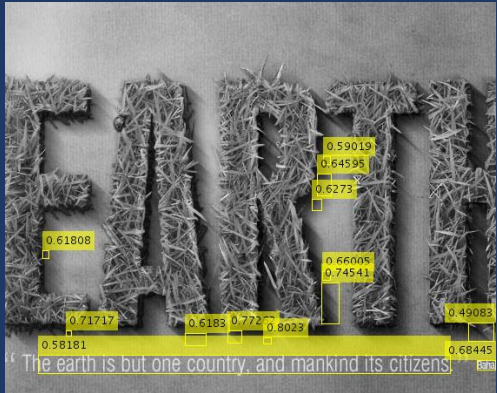


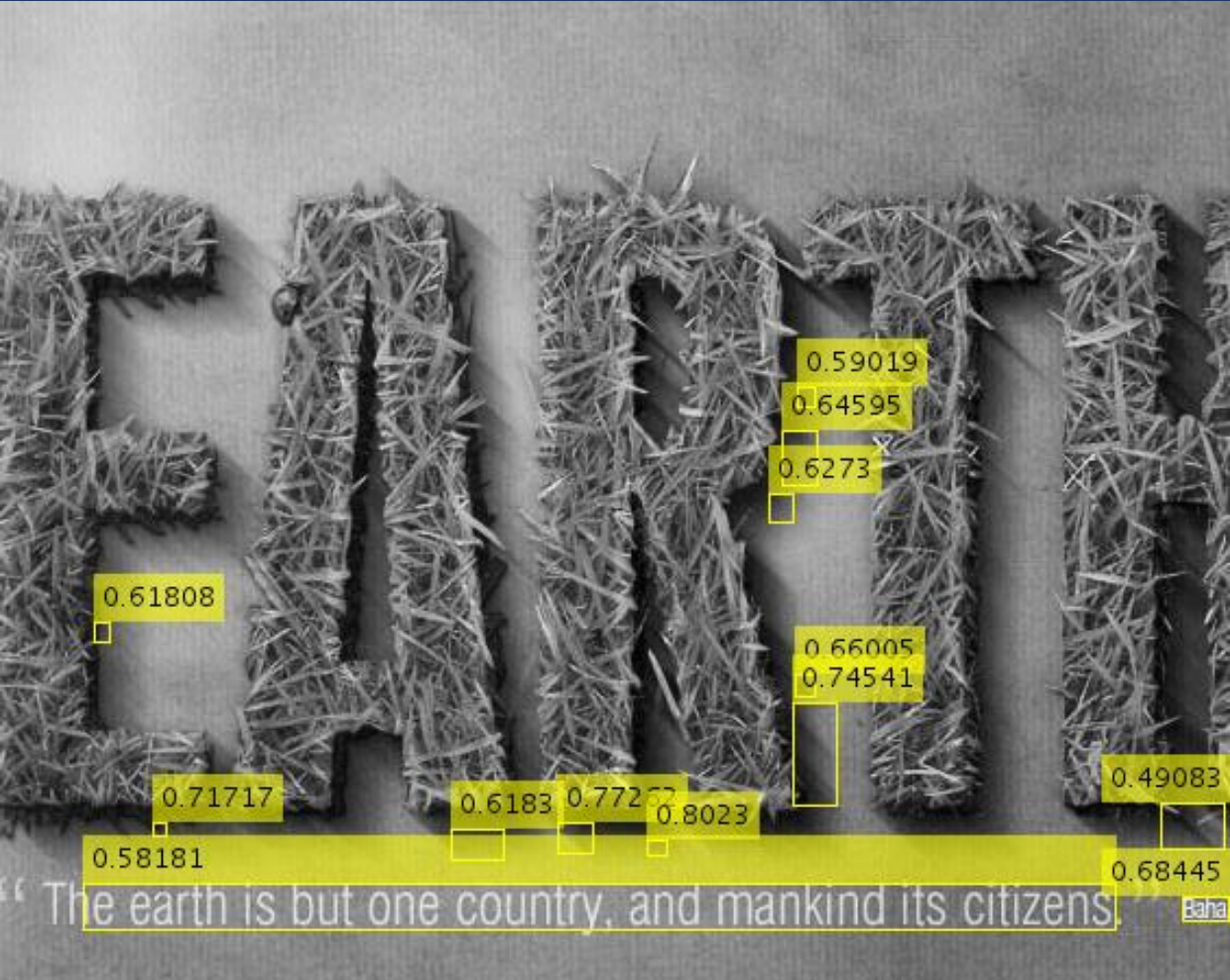






| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| PSD               | 0.50463    | P39             | 33               |
| Average           | 0.50463    |                 | 33               |

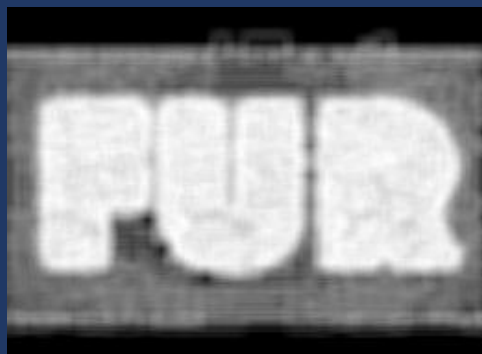
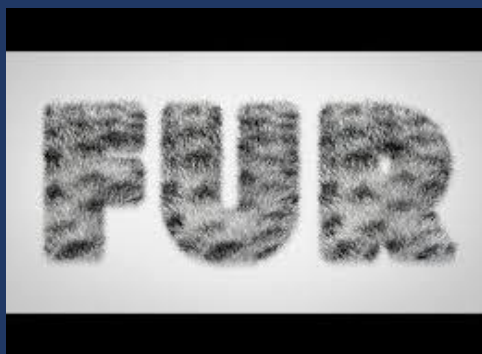


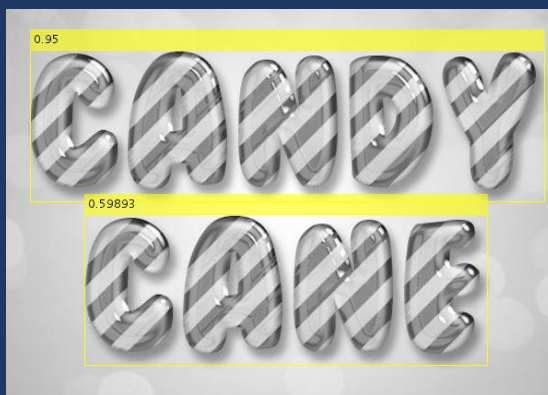
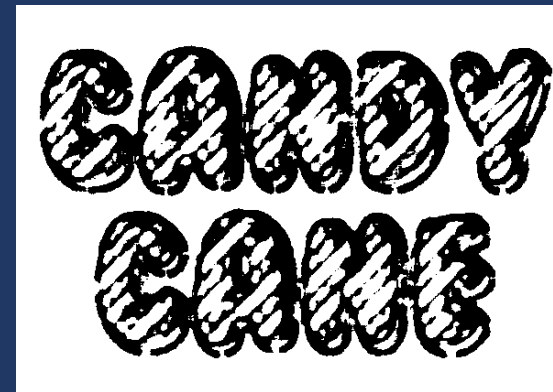
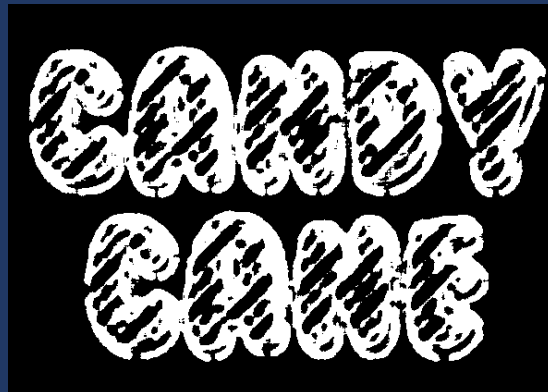
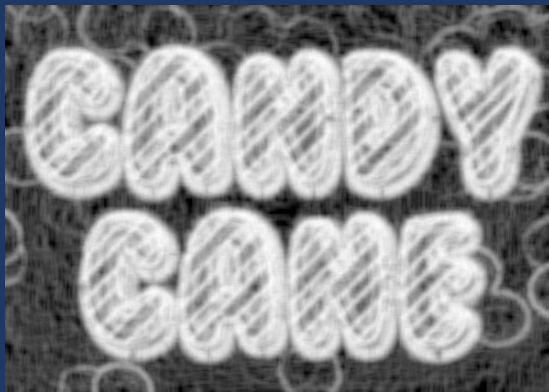


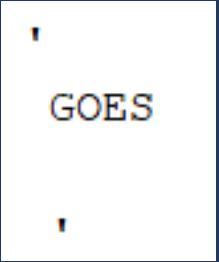
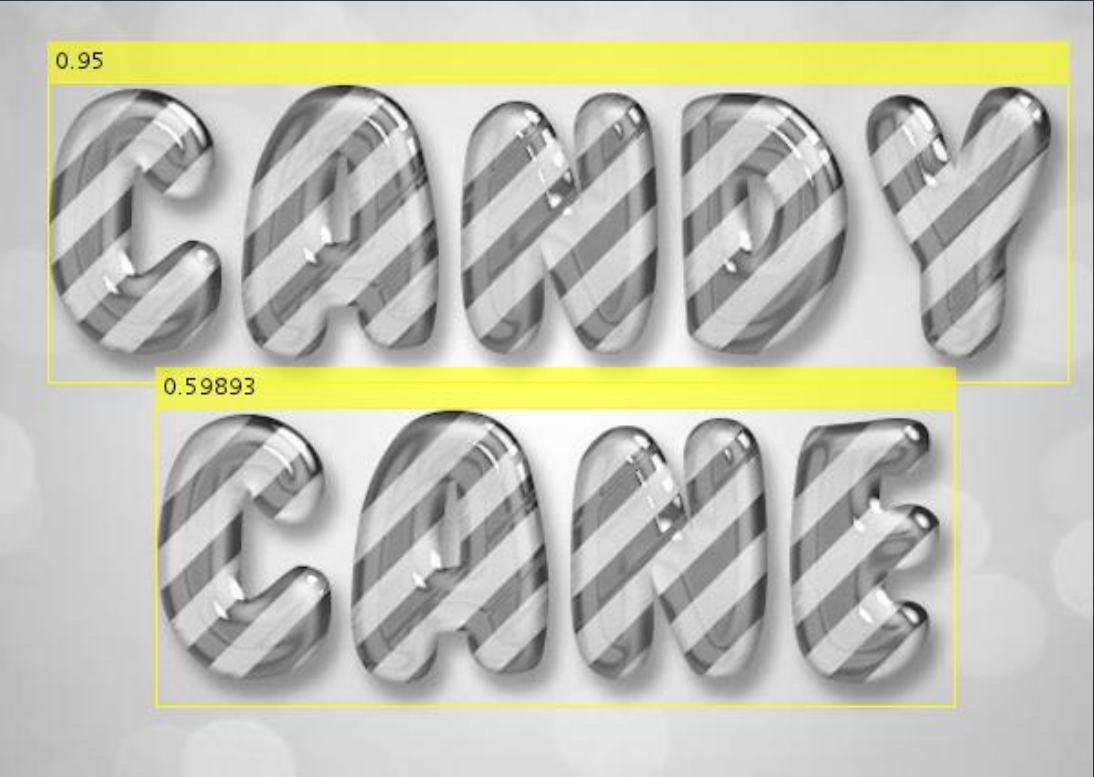
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| BB (Bounding Box)                                       | Confidence | Regconized Text | Recognition Rate |
|---|------------|-----------------|------------------|
| THE EARTH IS BUT ONE COUNTRY, AND MANKIND IT'S CITIZENS | 0.58181    |                 | 0                |
| Average   | 0.58181    |                 | 0                |









| BB (Bounding Box) | Confidence | Regconized Text | Recognition Rate |
|-------------------|------------|-----------------|------------------|
| CANDY             | 0.95       | GOES            | 0                |
| CANE              | 0.59893    |                 | 0                |
| Average           | 0.774465   |                 | 0                |



# Comparison

---



A

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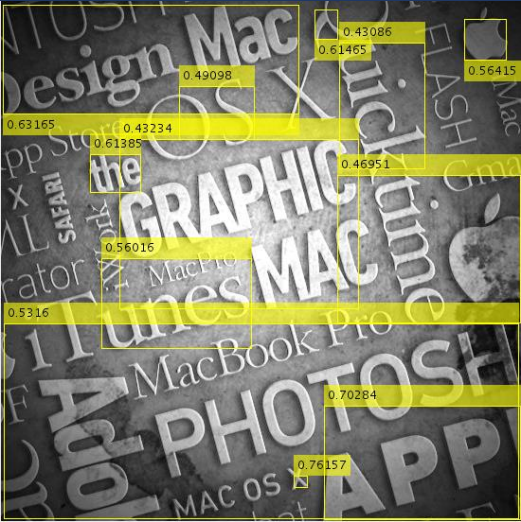
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B

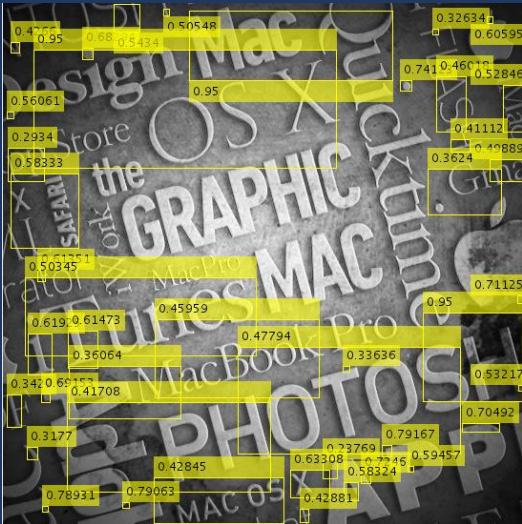
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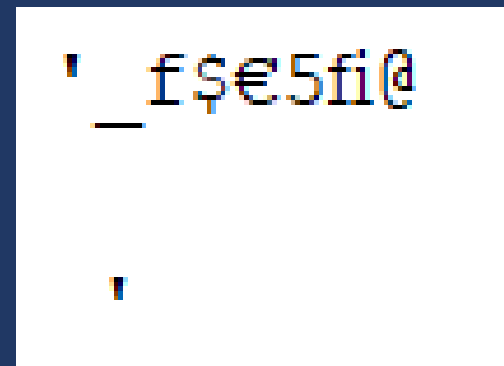


B

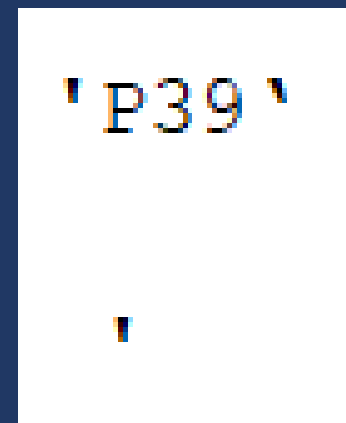
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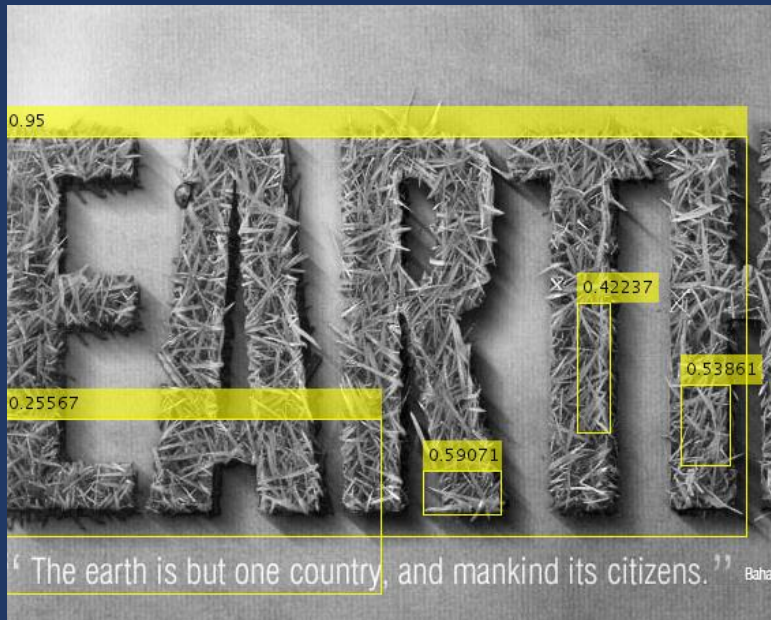


A



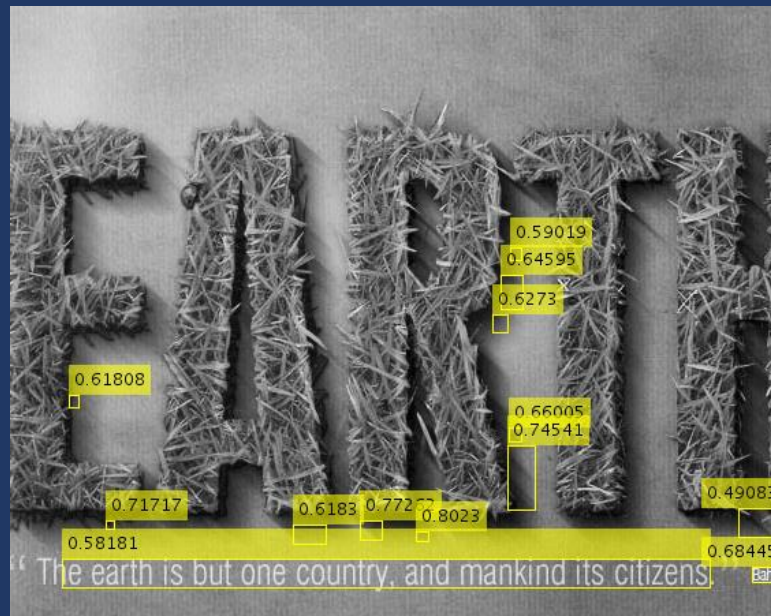
B





A

```
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'
```



B

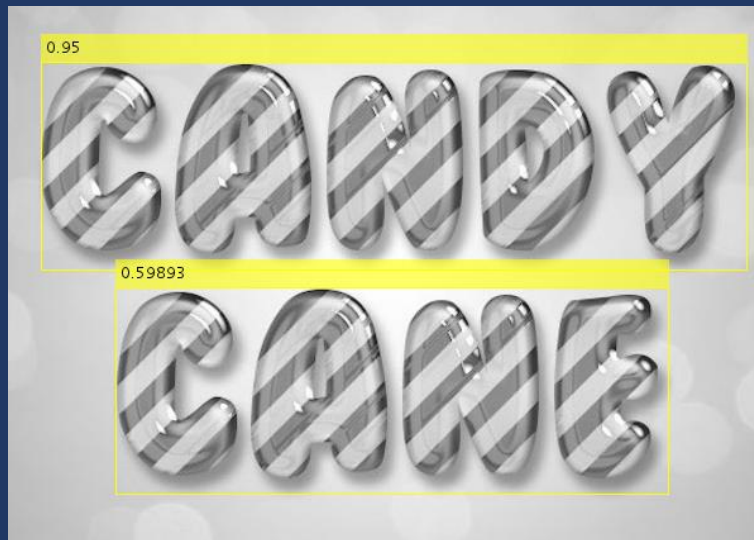
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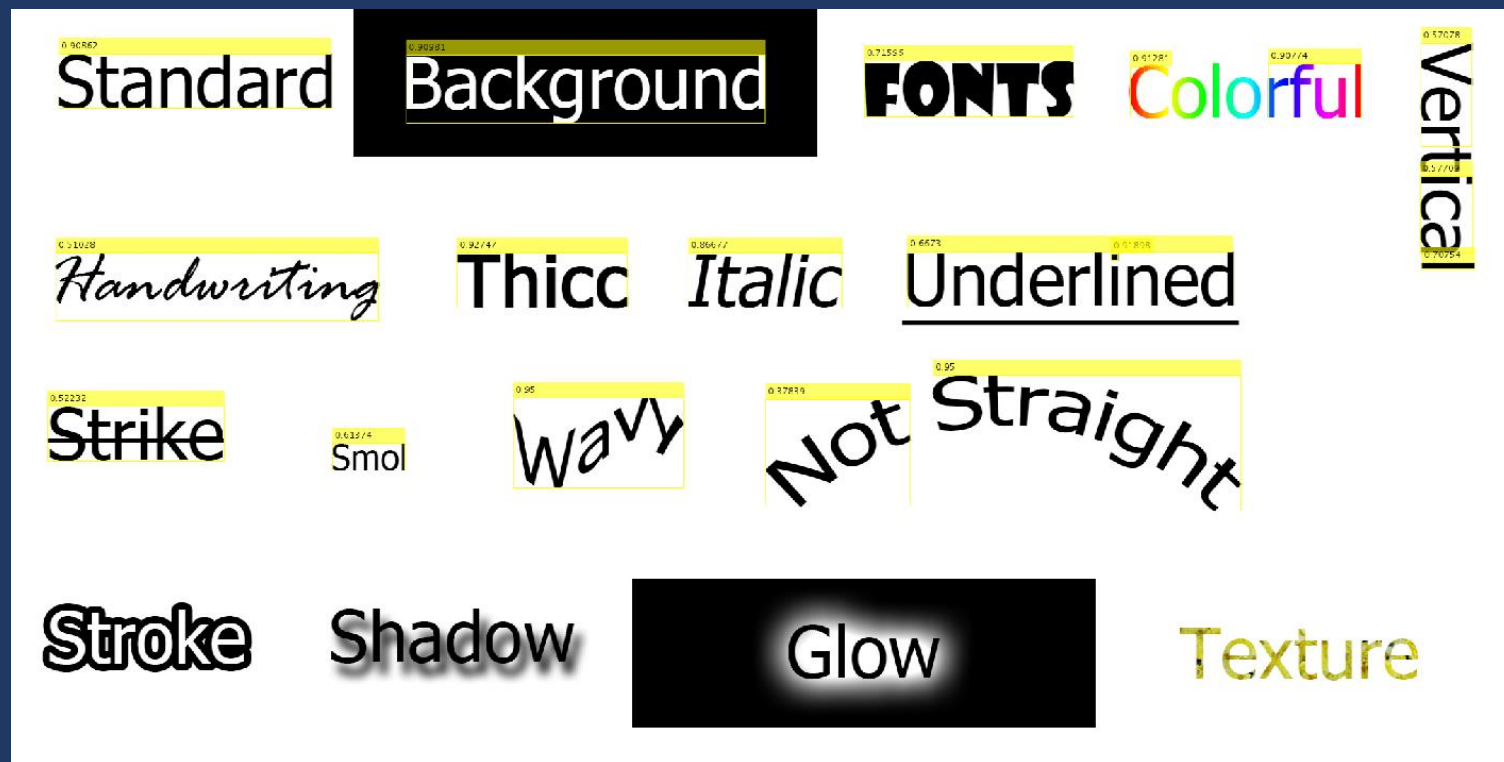
B

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GOES
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OCR

---

Analysis



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S:[-flzike Smol $0`.

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Thank you

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