

CSIT5410 Recognition Systems Spring Semester 2021 Assignment 3

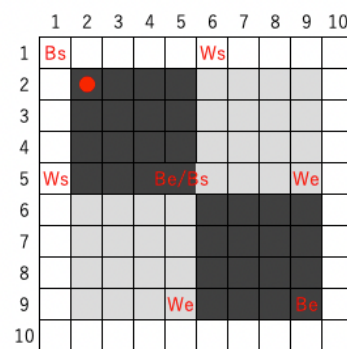
ID: 20737506

Name: Yoshinori SAIKI

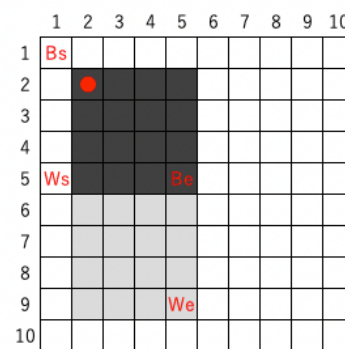
• A brief explanation of your weak classifiers

Used five different types of haar feature kernels as the following.

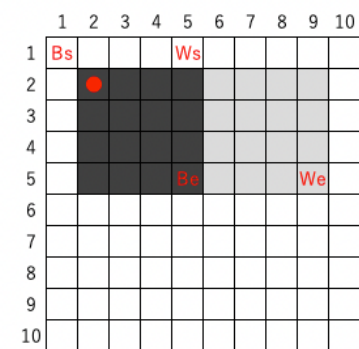
Kernel 1



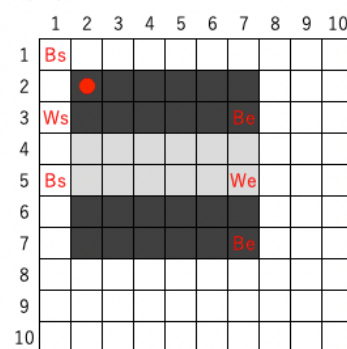
Kernel 2



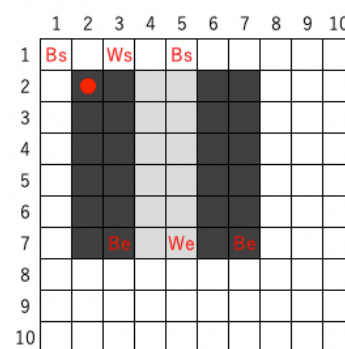
Kernel 3



Kernel 4



Kernel 5



- current cell
- Bs starting cell for the black area
- Be ending cell for the black area
- Ws ... for the white
- We ... for the white

• A brief explanation of your preprocessing methods (if any)

Exactly follow the instruction in the handout.

1. $I = \text{rgb2gray}(I);$
2. $I = \text{histeq}(I);$
3. $I = \text{imresize}(I, [128 \ 128]);$

• A screen capture of the selected weak classifiers and its weight after the Adaboost algorithm

• A screen capture of the classification accuracy of each weak classifier and strong classifier on images specified in csit5410_test.txt

• A screen capture of the detection results of the given images in the "test_images" folder, a maximum of 3 bounding boxes per image.

csit5410_assignment3.m

```

20 - WC_4 = load('WC_4.mat');
21 - WC_5 = load('WC_5.mat');
22
23 %attr_size = 100;
24 attr_size = length(ids);
25
26 ids_val = ids(1:attr_size,:);
27 Y_val = gt(1:attr_size,:);
28
29 %attr_size_test = 100;
30 attr_size_test = length(ids_test);
31
32 ids_test = ids_test(1:attr_size_test,:);
33 Y_test = gt_test(1:attr_size_test,:);
34
35 % initialize weights
36 W = ones(1, attr_size)*1/attr_size;
37 L = zeros(attr_size,5); %labels
38 E = zeros(1,5); % error
39 A = zeros(1,5); % alpha
40 A_checked = zeros(1,5); % checked_alpha_index
41
42 for l = 1:5 % determine alpha
43     for i = 1:5 % number of models
44         if l==1
45             X_val = {};
46             for k=1:length(ids_val) % get training images fit to the size
47                 I = imread(sprintf(VOCopts.imgpath,ids_val{k}));
48                 I = rgb2gray(I);
49                 I = histeq(I);

```

Figure 1

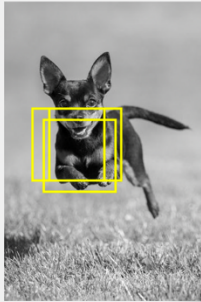


Figure 2

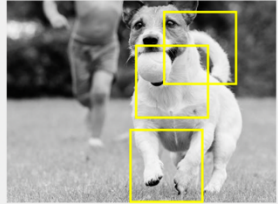
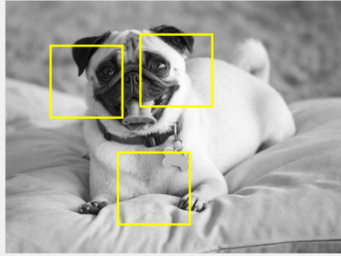


Figure 3



Command Window

```

>> csit5410_assignment3
Correctness (Weak Classifier 1): 2290 / 2510
Correctness (Weak Classifier 2): 2290 / 2510
Correctness (Weak Classifier 3): 2027 / 2510
Correctness (Weak Classifier 4): 1624 / 2510
Correctness (Weak Classifier 5): 1246 / 2510
-----
Alpha values
1.1738  0.0317  0.2358  0.4941  0.3123
-----
Creating a strong classifier...
Correctness (Strong Classifier): 453 / 500
-----
Detecting an object with sliding window ...
Working on image1
Working on image2
Working on image3
fx >>

```

Note: showing confidence rate isn't applied.

Written Section

(1)

20	67	30
15	67	84
65	86	21

0	1	0
0		1
0	1	0

0	1	0	0	0	1	0	1
128	64	32	16	8	4	2	1
0	64	0	0	0	4	0	1

69

(2)

21	86	65
84	67	15
30	67	20

0	1	0
1		0
0	1	0

0	0	1	0	1	0	1	0
128	64	32	16	8	4	2	1
0	0	32	0	8	0	2	0

42

(3)

21	70	32
16	69	82
66	85	20

0	1	0
1		1
1	1	0

1	0	1	0	1	1	1	0
128	64	32	16	8	4	2	1
128	0	32	0	8	4	2	0

174