Image Edge Histogram

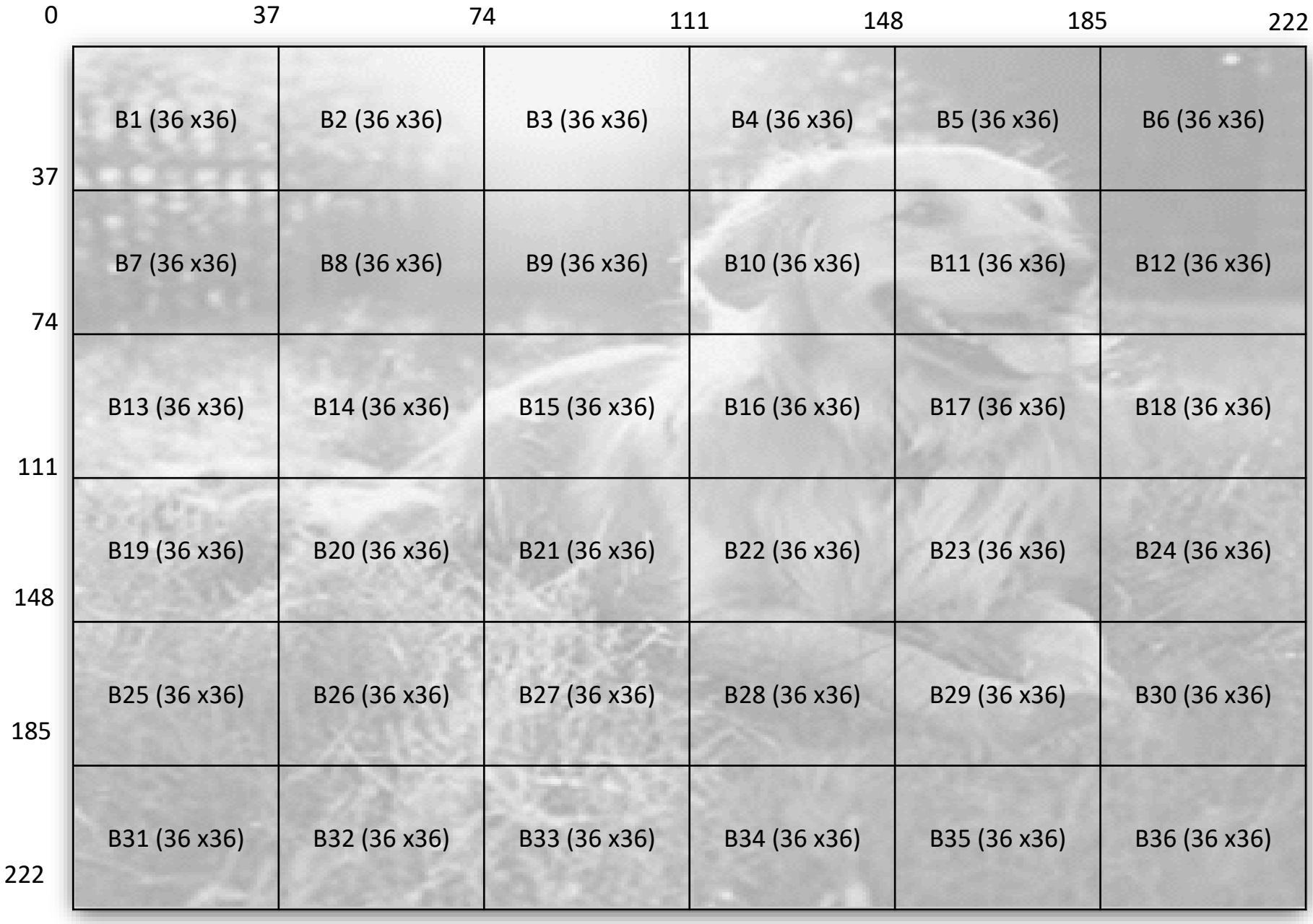
225 x 224

RGB to Grayscale

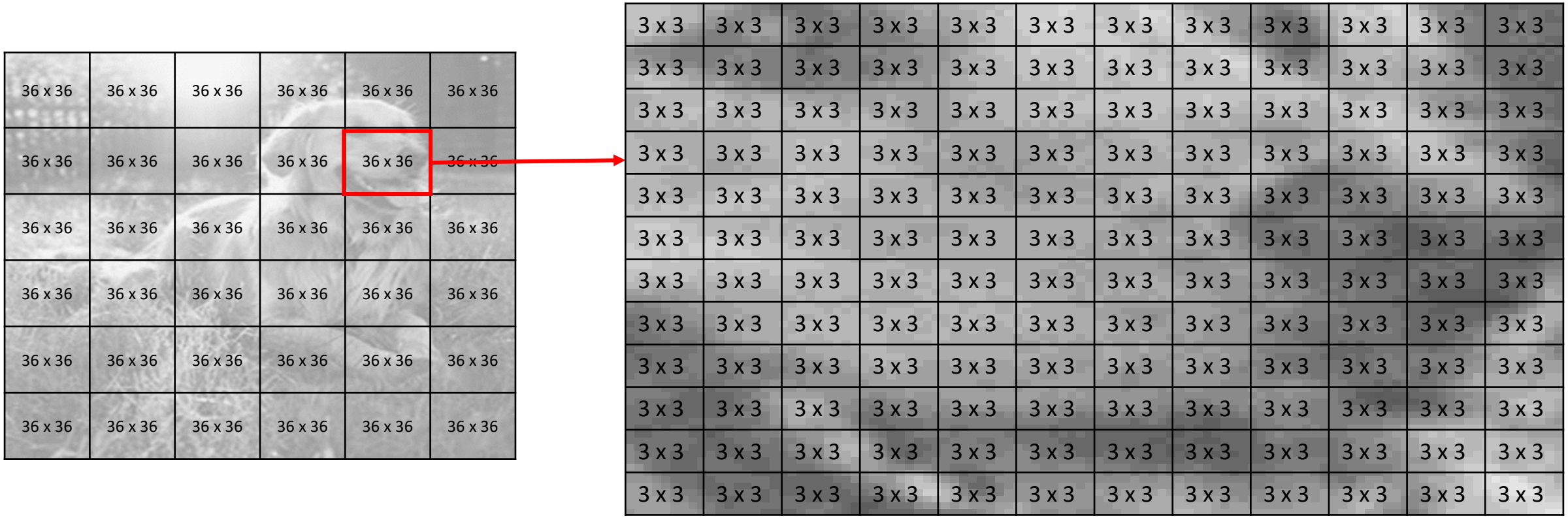
225 x 224

Resized as multiple of 6

222 x 222



After resizing, image is divided into blocks of size 36 x 36



- Dimensional of each block is made multiple of 3, as edge filters are of 3x3 dimensions
- A block of 36 is further divided into sub blocks of size 3 x 3. Hence for each block there are 12 x 12 =244 sub blocks (or for each block, there are 12 rows and 12 columns)

$Sub - block * Filter$

$\sum$ Sub−block ∗ Filter

$\max(\sum$ Sub−block ∗ Filter)

125	50	80
126	100	70
120	128	80

Vertical Edge Filter

-1	-2	-1
0	0	0
1	2	1

=

-1*125	-2*50	-1*80
0*126	0*100	0*70
1*120	2*128	1*80

= 201

Horizontal Edge Filter

-1	0	1
-2	0	2
-1	0	1

=

-1*125	0*50	1*80
-2*126	0*100	2*70
-1*120	0*128	1*80

= 149

D45 Edge Filter

-2	-1	0
-1	0	1
0	1	2

=

-2*125	-1*50	0*80
-1*126	0*100	1*70
0*120	1*128	2*80

= -68

D135 Edge Filter

0	1	2
-1	0	1
-2	-1	0

=

0*125	1*50	2*80
-1*126	0*100	1*70
-2*120	-1*128	0*80

= -214

Isotropic Edge Filter

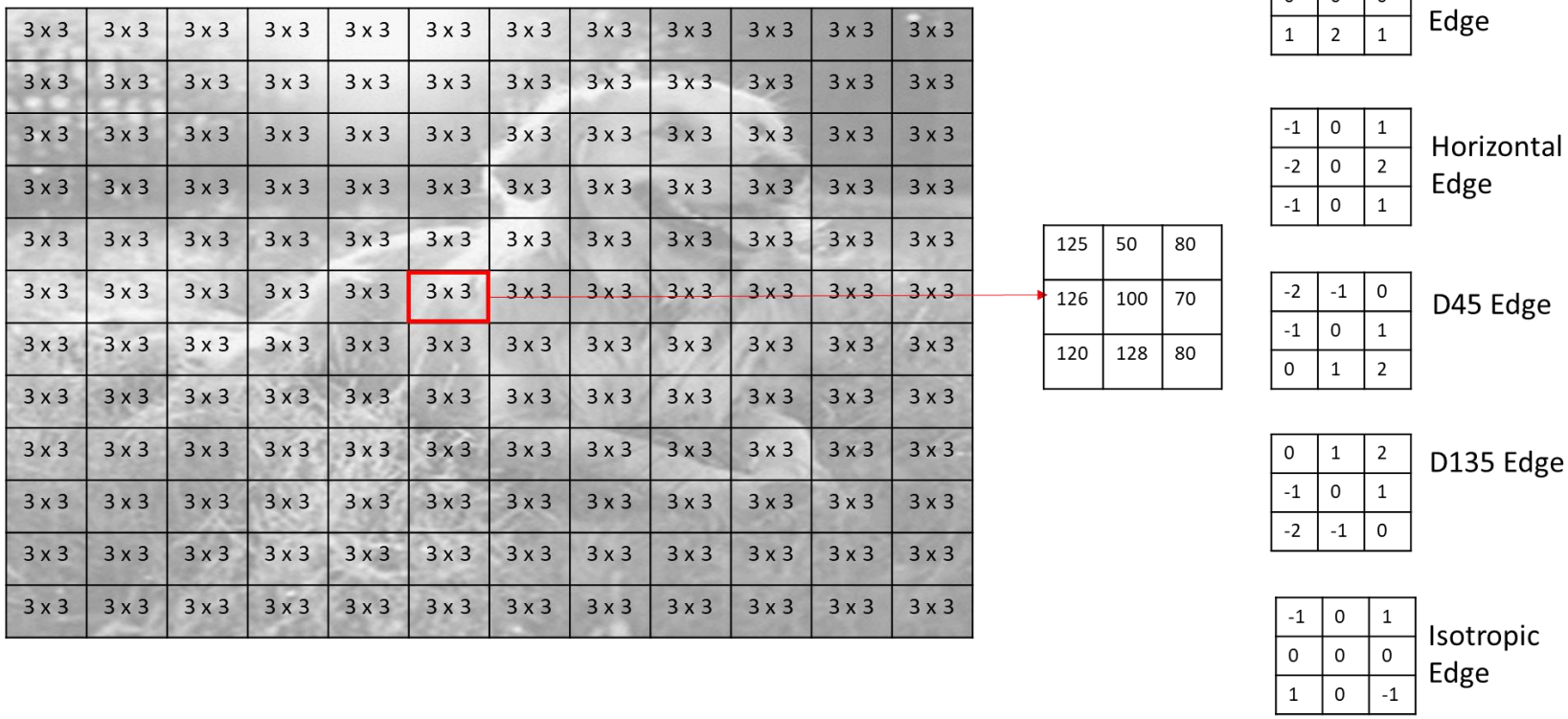
-1	0	1
0	0	0
1	0	-1

=

-1*125	0*50	1*80
0*126	0*100	0*70
1*120	0*128	-1*80

= -5

201
(Detected as Vertical Edge)



5 Filters of size 3x3 will be applied to each sub block and score of maximum filter will be overserved.

If that value is greater than a pre-defined threshold then frequency of that edge will be incremented by one

0	3	6	9	12	15	18	21	24	27	30	33	36
3	V	V	V	V	V	V	V	V	V	V	V	V
6	V	D135	D135	D135	D135	ISOT	ISOT	ISOT	ISOT	ISOT	ISOT	D135
9	D45	ISOT	H	H	H	ISOT	H	H	H	ISOT	ISOT	D135
12	ISOT	D45	ISOT	V	D135	ISOT	ISOT	ISOT	ISOT	V	ISOT	D135
15	D135	ISOT	D45	D45	D135	V	H	H	H	V	ISOT	D135
18	D135	ISOT	D135	D45	D135	V	D45	ISOT	ISOT	V	ISOT	D135
21	D135	ISOT	D135	D45	D45	V	D45	ISOT	ISOT	ISOT	V	D135
24	D135	ISOT	V	ISOT	D135	ISOT	D45	ISOT	V	ISOT	ISOT	D135
27	D135	ISOT	ISOT	ISOT	D135	D45	H	H	H	H	H	D135
30	ISOT	ISOT	ISOT	ISOT	D135	V	D45	ISOT	ISOT	V	ISOT	ISOT
33	H	H	H	H	H	H	D45	D45	ISOT	V	D45	D45
36	ISOT	ISOT	ISOT	ISOT	ISOT	ISOT	ISOT	ISOT	D45	V	ISOT	ISOT

Pv	Ph	D45	D135	ISOT
27	20	17	25	67

	PV	PH	D45	D135	ISOT
0					
1					
2					
3					
4					
.....					
29					
30					
31					
32					
33					
34					
35					
36					

- In above grid, Name of filter with highest score is mentioned
- According to the occurrence of particular edge in a sub block a list of bins is maintained. As there are 6 x 6 blocks, so we will get 36 such bins
- There will be an array of 37x 5; 36 x 5 as per number of blocks. Where as the last row will store mean value of each edge.
- In total there will be 37*5=185 total numeric values. As overall score of image w.r.t each edge, last row will be considered