Extraction Feature

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Macam-macam Ekstraksi Feature

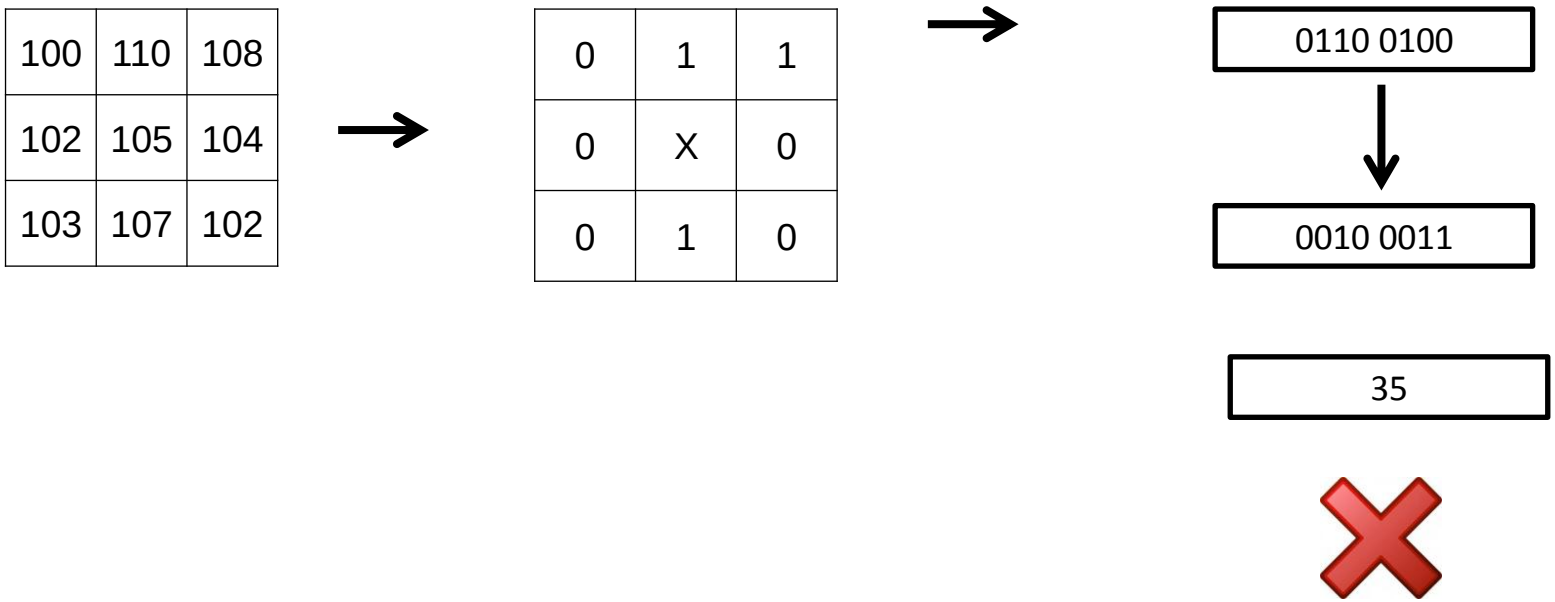
1. Local Binary Pattern
2. Local Ternary Pattern
3. Histogram of Oriented Gradient
4. Weber Local Descriptor

Question LBP 36 URI ?

100	110	108
102	105	104
103	107	102

110	110	108
122	105	104
103	100	102

Answer


100 110 108
102 105 104
103 107 102
0 1 1
0 X 0
0 1 0
0110 0100
0010 0011
35

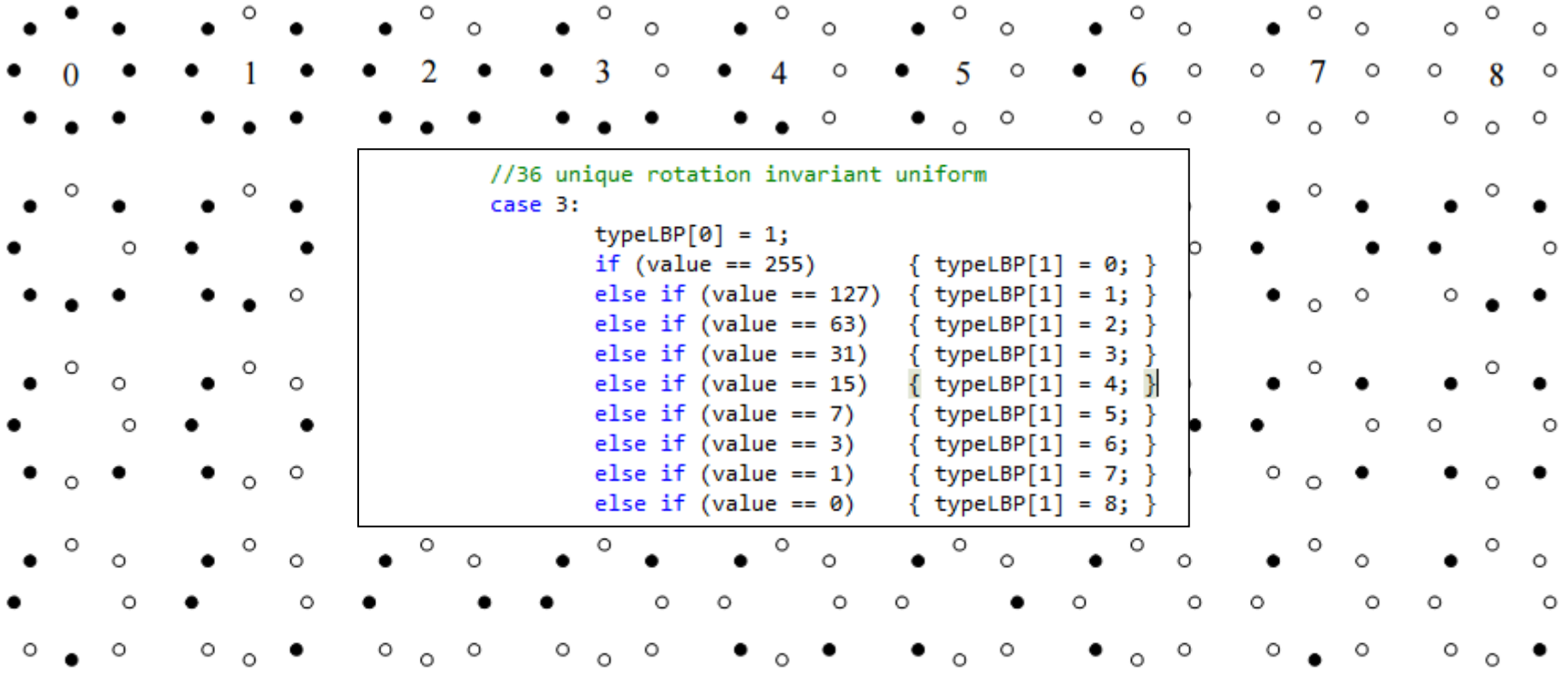
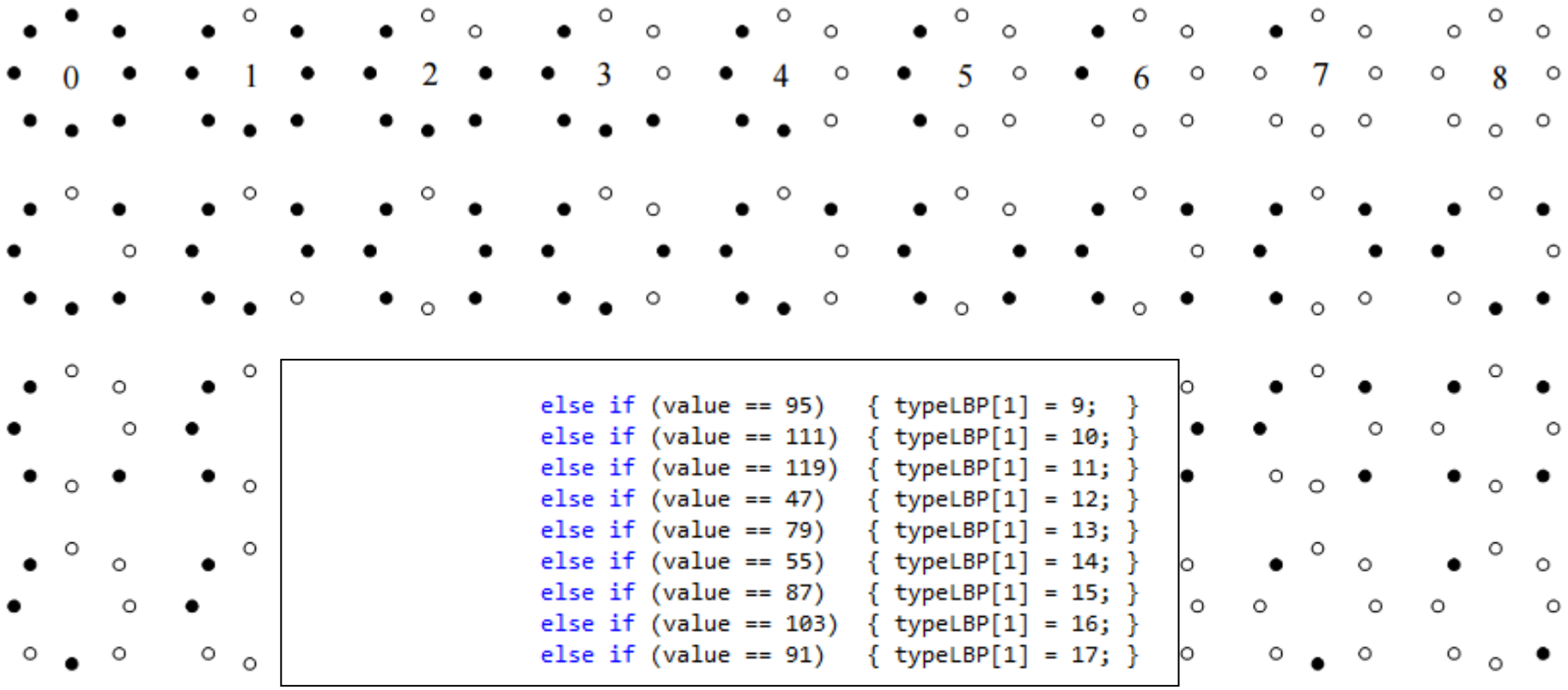


Fig. 2. The 36 unique rotation invariant binary patterns that can occur in the circularly symmetric neighbor set of $LBP_{8,R}^{ri}$. Black and white circles correspond to bit values of 0 and 1 in the 8-bit output of the operator. The first row contains the nine 'uniform' patterns, and the numbers inside them correspond to their unique $LBP_{8,R}^{riu2}$ codes.




```
else if (value == 95)   { typeLBP[1] = 9;  }
else if (value == 111)  { typeLBP[1] = 10; }
else if (value == 119)  { typeLBP[1] = 11; }
else if (value == 47)   { typeLBP[1] = 12; }
else if (value == 79)   { typeLBP[1] = 13; }
else if (value == 55)   { typeLBP[1] = 14; }
else if (value == 87)   { typeLBP[1] = 15; }
else if (value == 103)  { typeLBP[1] = 16; }
else if (value == 91)   { typeLBP[1] = 17; }
```

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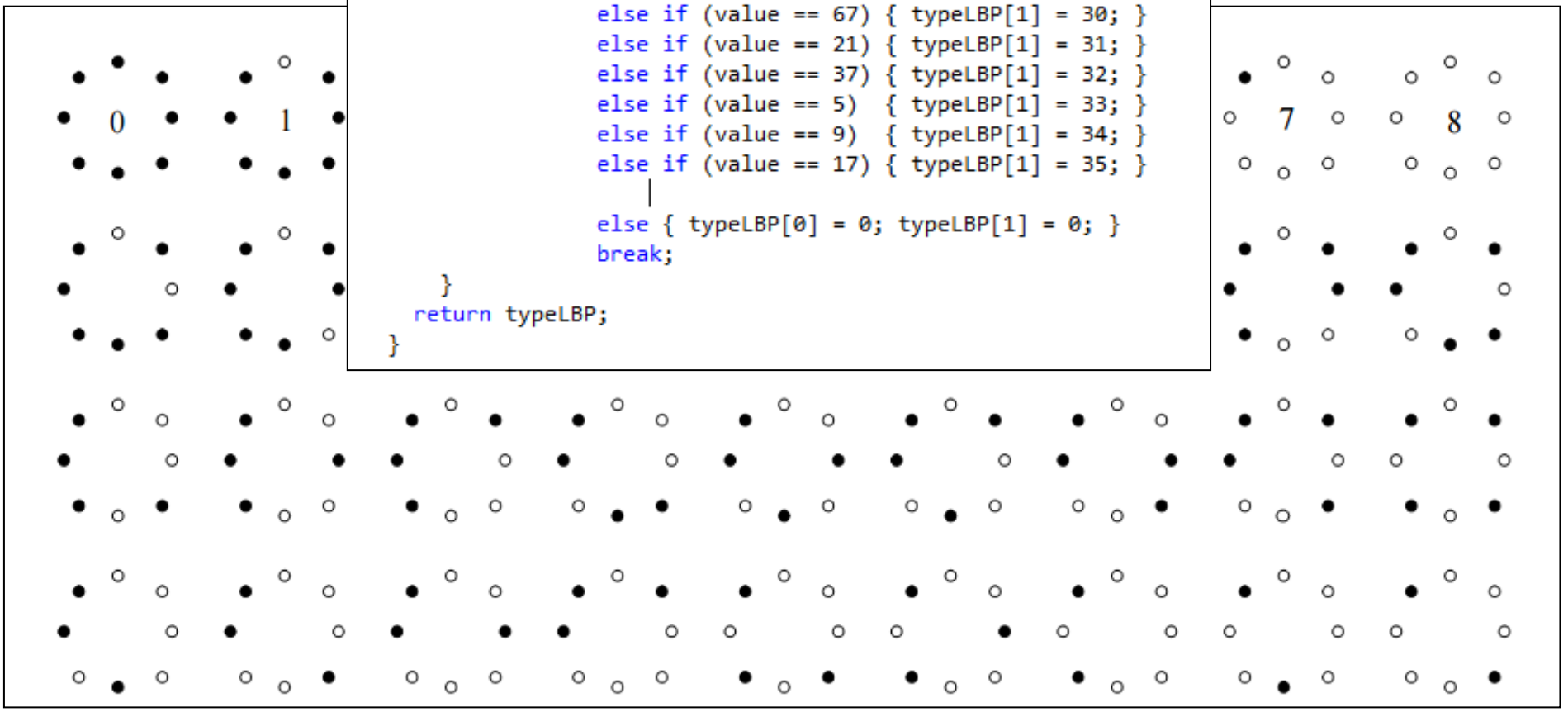
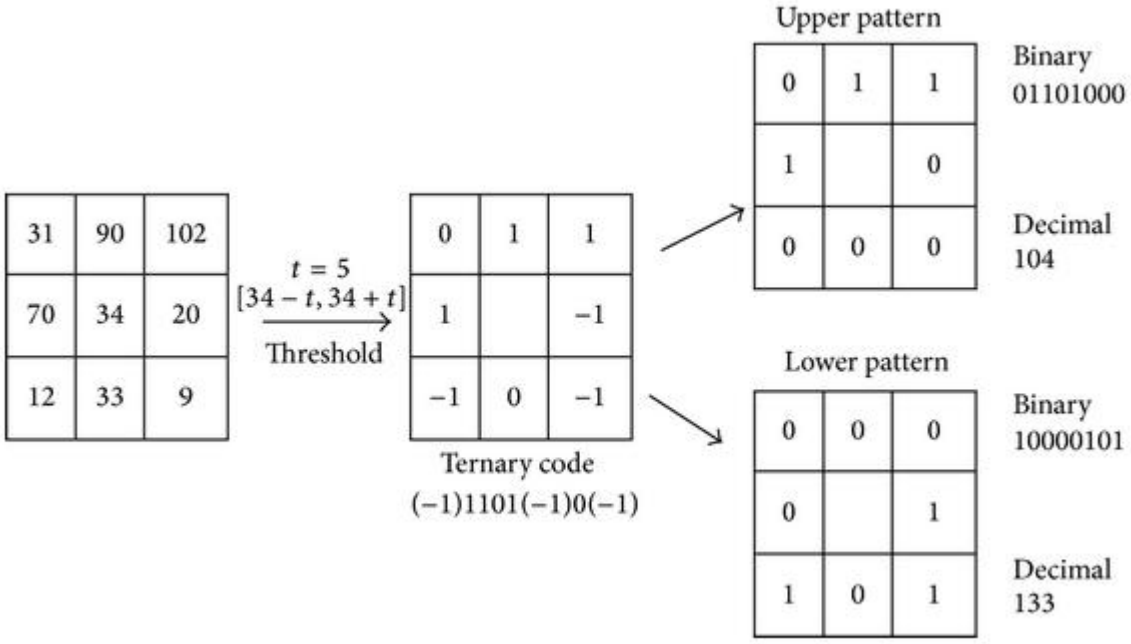



```
                else if (value == 23) { typeLBP[1] = 18; }
                else if (value == 39) { typeLBP[1] = 19; }
                else if (value == 71) { typeLBP[1] = 20; }
                else if (value == 27) { typeLBP[1] = 21; }
                else if (value == 43) { typeLBP[1] = 22; }
                else if (value == 75) { typeLBP[1] = 23; }
                else if (value == 51) { typeLBP[1] = 24; }
                else if (value == 83) { typeLBP[1] = 25; }
                else if (value == 85) { typeLBP[1] = 26; }

                else if (value == 11) { typeLBP[1] = 27; }
                else if (value == 19) { typeLBP[1] = 28; }
                else if (value == 35) { typeLBP[1] = 29; }
                else if (value == 67) { typeLBP[1] = 30; }
                else if (value == 21) { typeLBP[1] = 31; }
                else if (value == 37) { typeLBP[1] = 32; }
                else if (value == 5)  { typeLBP[1] = 33; }
                else if (value == 9)  { typeLBP[1] = 34; }
                else if (value == 17) { typeLBP[1] = 35; }

                else { typeLBP[0] = 0; typeLBP[1] = 0; }
                break;
            }
        return typeLBP;
    }
```

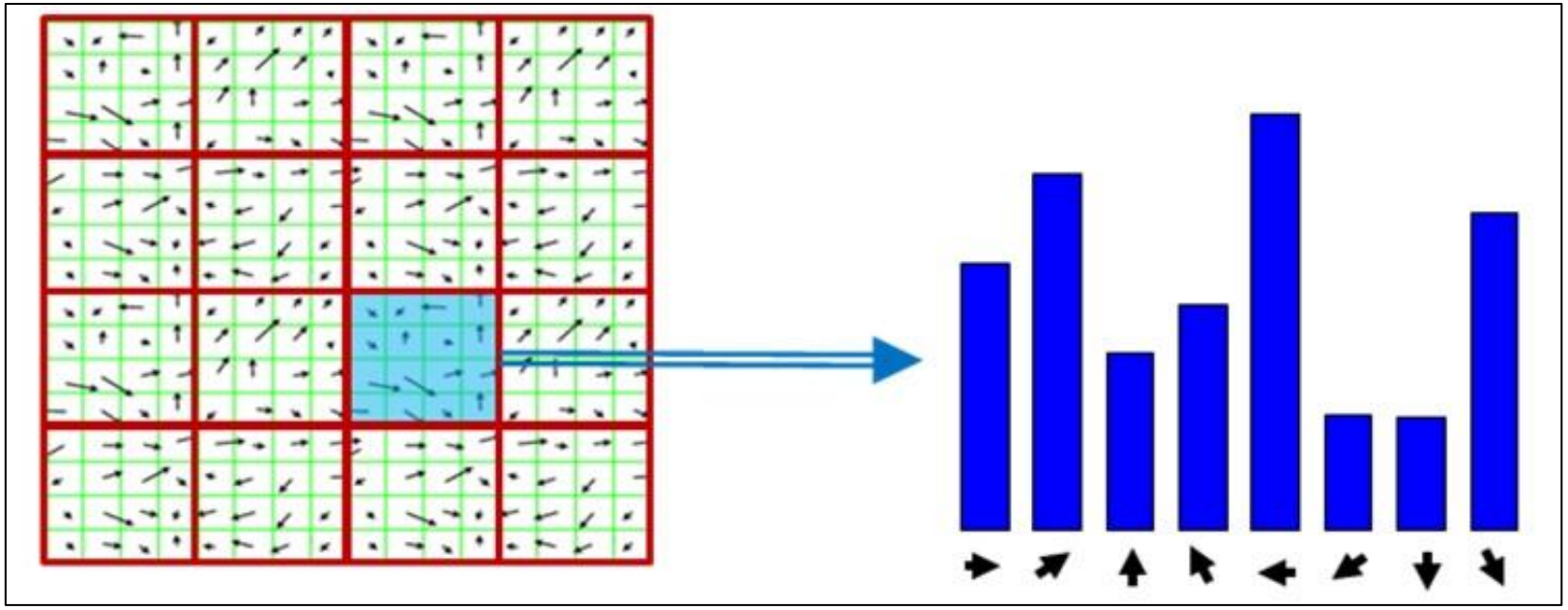
Local Ternary Pattern



http://www.hindawi.com/journals/tswj/2014/373254.fig.004.jpg

Question LBP & LTP ?

110	110	108
122	105	104
103	100	102



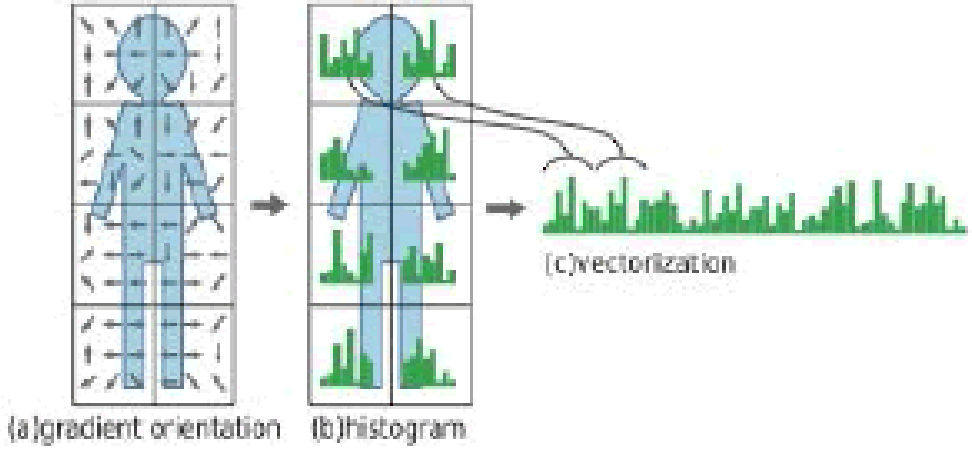
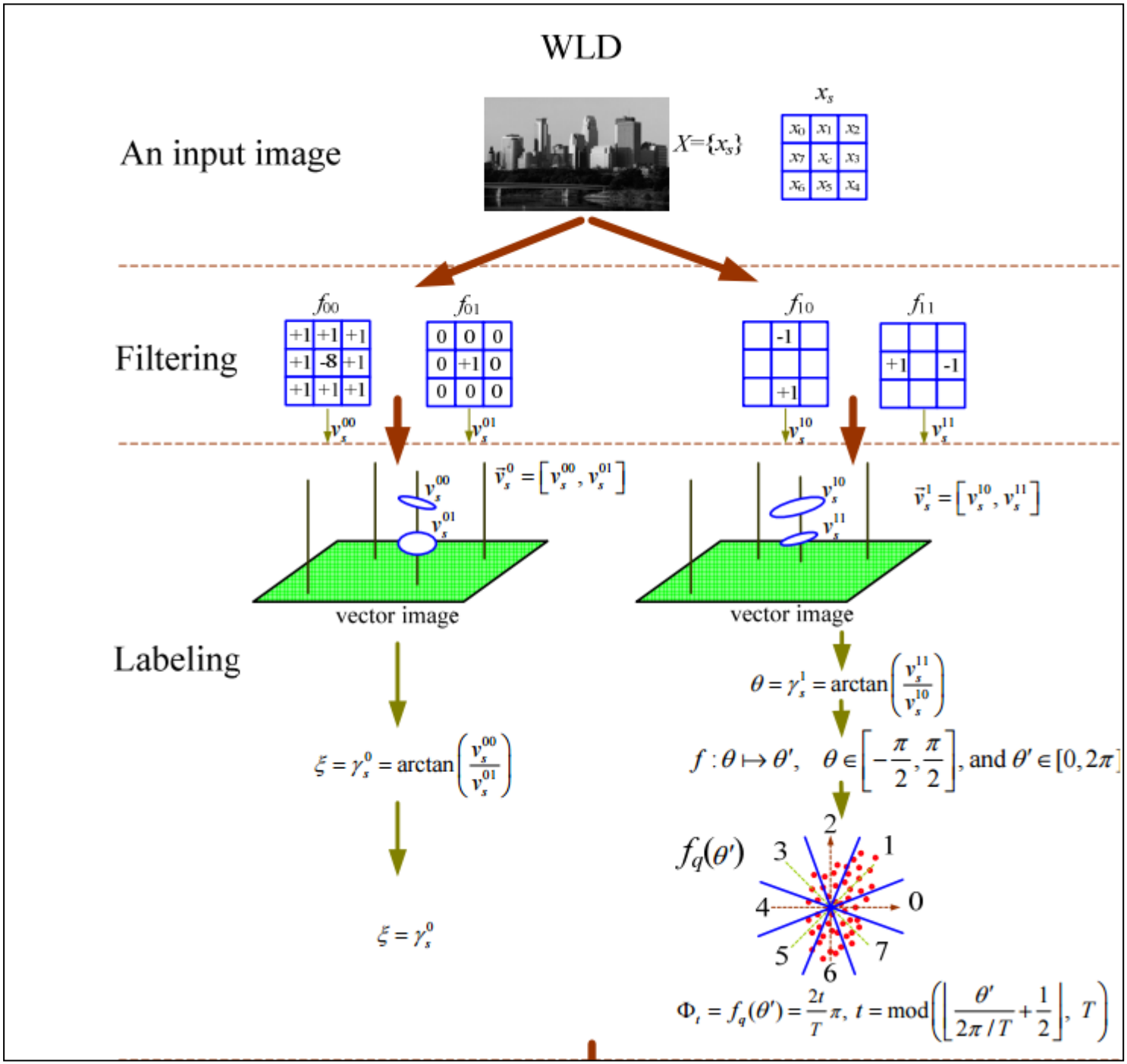


Figure 3.5 (a) (b) Overview of HOG calculation


WLD
An input image
$X=\{x_s\}$
x_s
x_0 x_1 x_2
x_7 x_c x_3
x_6 x_5 x_4
Filtering
f_{00}
+1 +1 +1
+1 -8 +1
+1 +1 +1
f_{01}
0 0 0
0 +1 0
0 0 0
f_{10}
-1
+1
f_{11}
+1 -1
v_s^{00}
v_s^{01}
v_s^{10}
v_s^{11}
$\vec{v}_s^0 = [v_s^{00}, v_s^{01}]$
$\vec{v}_s^1 = [v_s^{10}, v_s^{11}]$
vector image
vector image
Labeling
$\xi = \gamma_s^0 = \arctan\left(\frac{v_s^{00}}{v_s^{01}}\right)$
$\theta = \gamma_s^1 = \arctan\left(\frac{v_s^{11}}{v_s^{10}}\right)$
$f : \theta \mapsto \theta', \quad \theta \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, and $\theta' \in [0, 2\pi]$
$f_q(\theta')$
0 1 2 3 4 5 6 7
$\xi = \gamma_s^0$
$\Phi_t = f_q(\theta') = \frac{2t}{T}\pi, \; t = \mathrm{mod}\left(\left\lfloor \frac{\theta'}{2\pi/T} + \frac{1}{2} \right\rfloor, \; T\right)$

Question HoG & WLD 36 URI ?

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End