Template Matching: Matlab

- Consider the biometric matrix and its template:

0	0	1	4	4	5
0	1	3	4	3	4
1	3	4	2	1	3
4	4	3	1	0	0
5	4	2	1	0	0
5	5	4	3	1	0

1	0	0
1	0	0
3	1	0

- Pad the biometric matrix according to the best possible way.
- Evaluate SAD, SSD, and NCC.
- Evaluate weighted histogram using Epanechnikov kernel (for W=3, H=3), merge it with the template, and find the best matching cell within the biometric matrix.
- Download the image from Moodle (week 7): Match the template using the weighted histogram.

Histogram of Oriented Gradients: Matlab

- Consider the matrix:

0	0	1	4	4	5
0	1	3	4	3	4
1	3	4	2	1	3
4	4	3	1	0	0
5	4	2	1	0	0
5	5	4	3	1	0

- Pad the matrix according to any two possible ways.
- Create Histogram of Oriented Gradient (HoG) feature.
- Download the image from Moodle (week 7): Create HoG feature.

$$g_{x_i} = b_i^{3\times3} * h_x$$
$$g_{y_i} = b_i^{3\times3} * h_y$$
$$h_x = [-1, 0, 1]$$
$$h_y = [-1, 0, 1]^T$$

$$G_i(j,k) = \sqrt{g_{x_i}(j,k)^2 + g_{y_i}(j,k)^2}$$

$$\theta_i(j,k) = tan^{-1}\left(g_{y_i}(j,k) \Big/ g_{x_i}(j,k)\right)$$