

## Figure

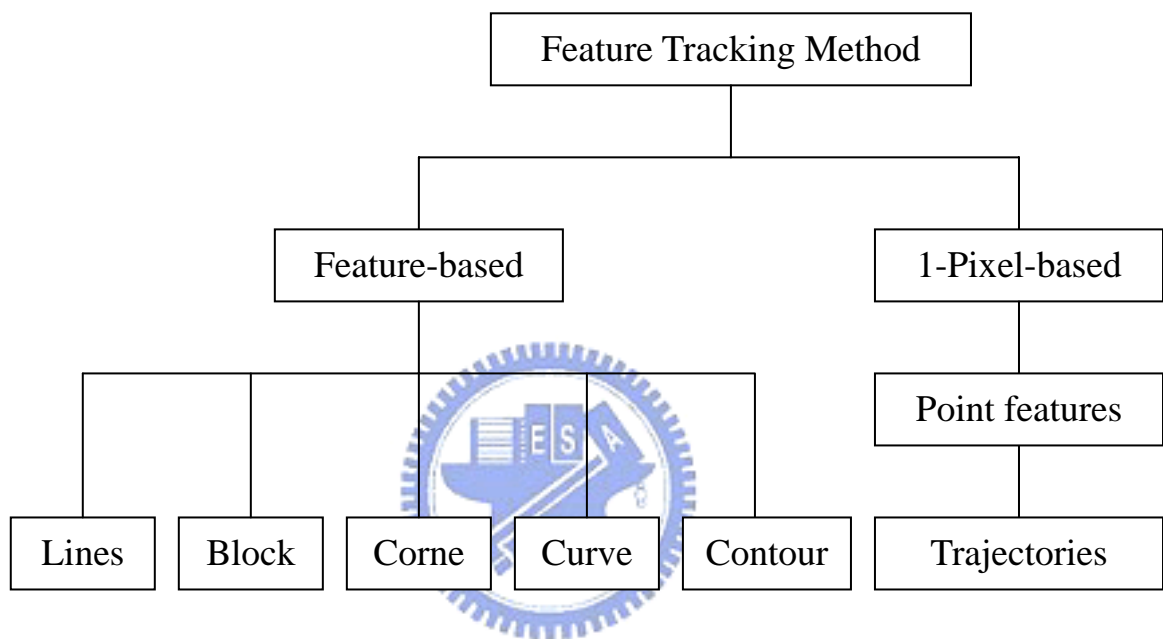


Figure 1-1 A classification of feature tracking methods

Extracted from Reference [13]

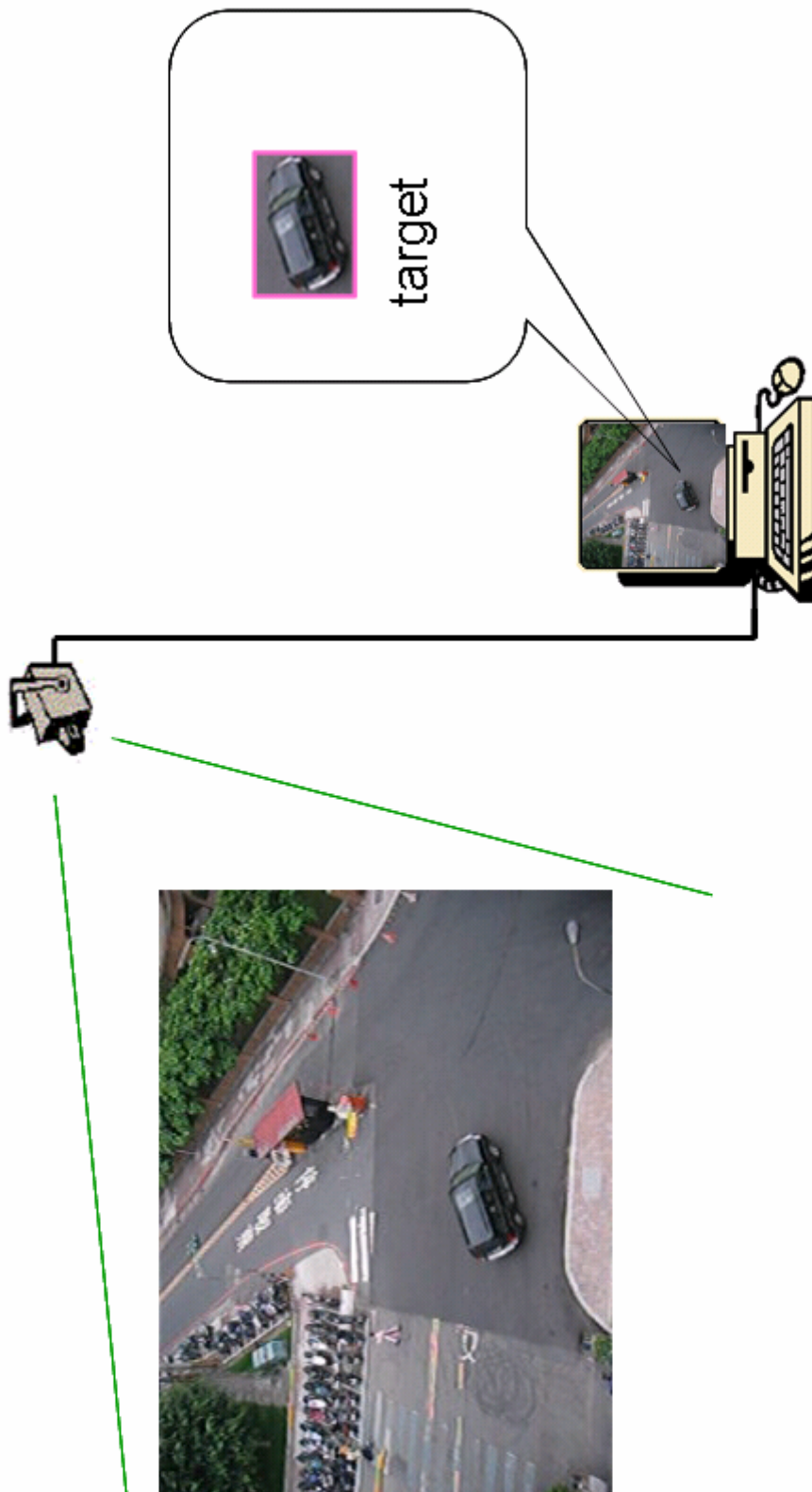


Figure 2-1 Scenario of target tracking

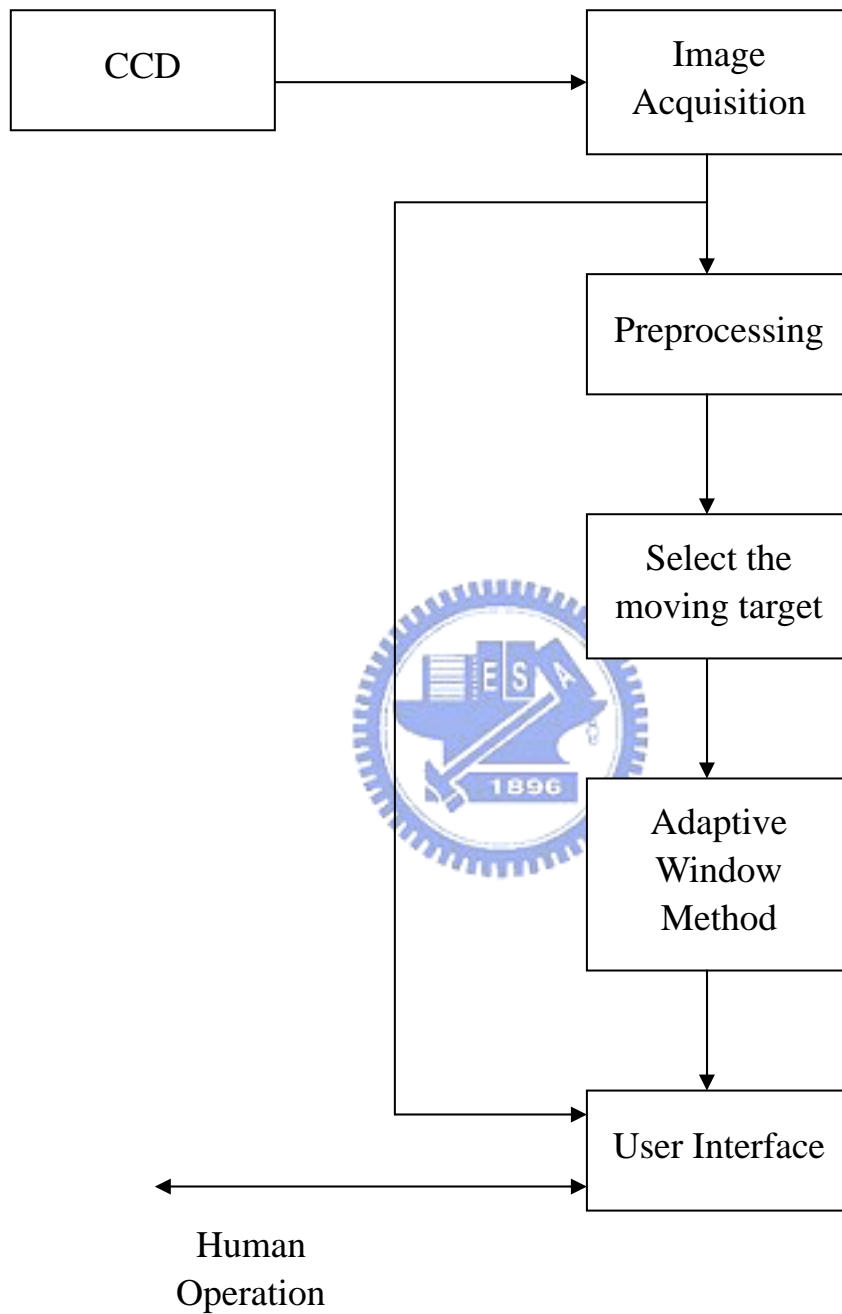


Figure 2-2 Block diagram of target tracking

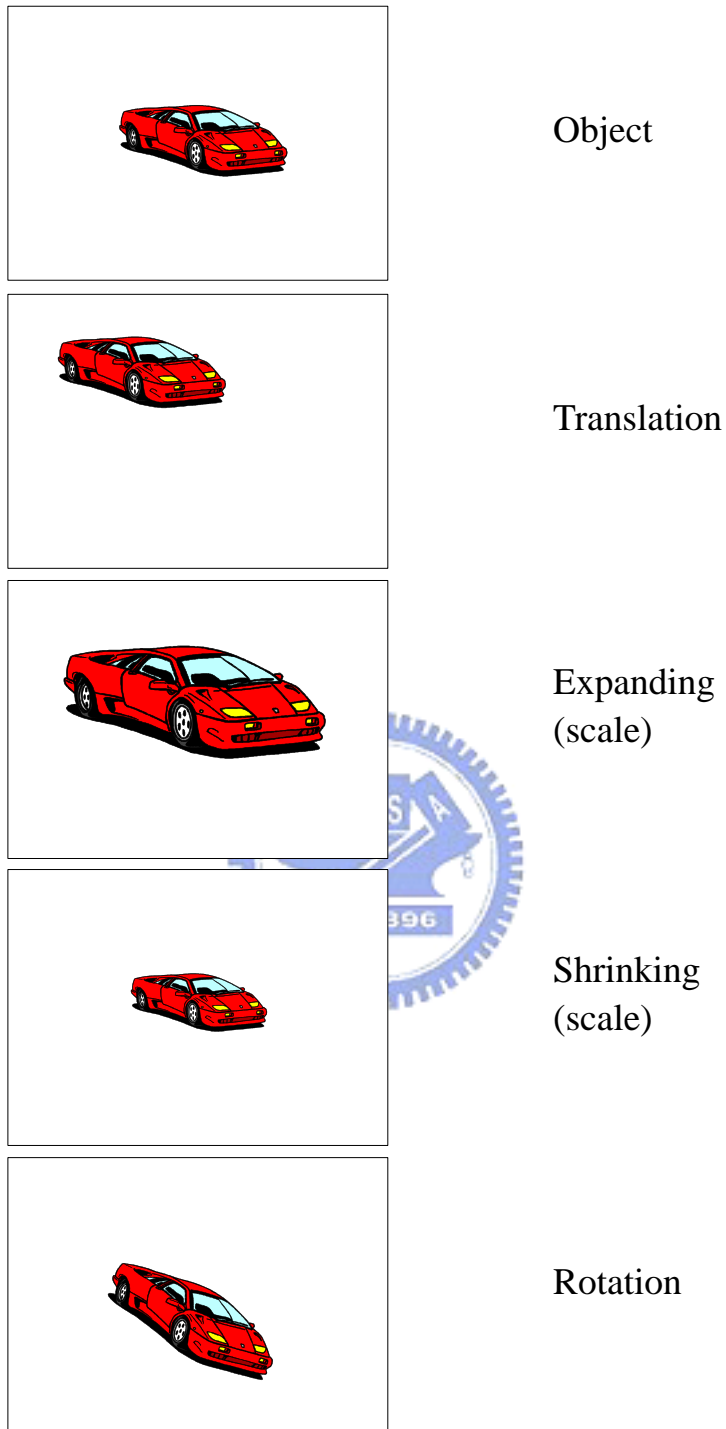


Figure 2-3 object movement relative to the imaging plane

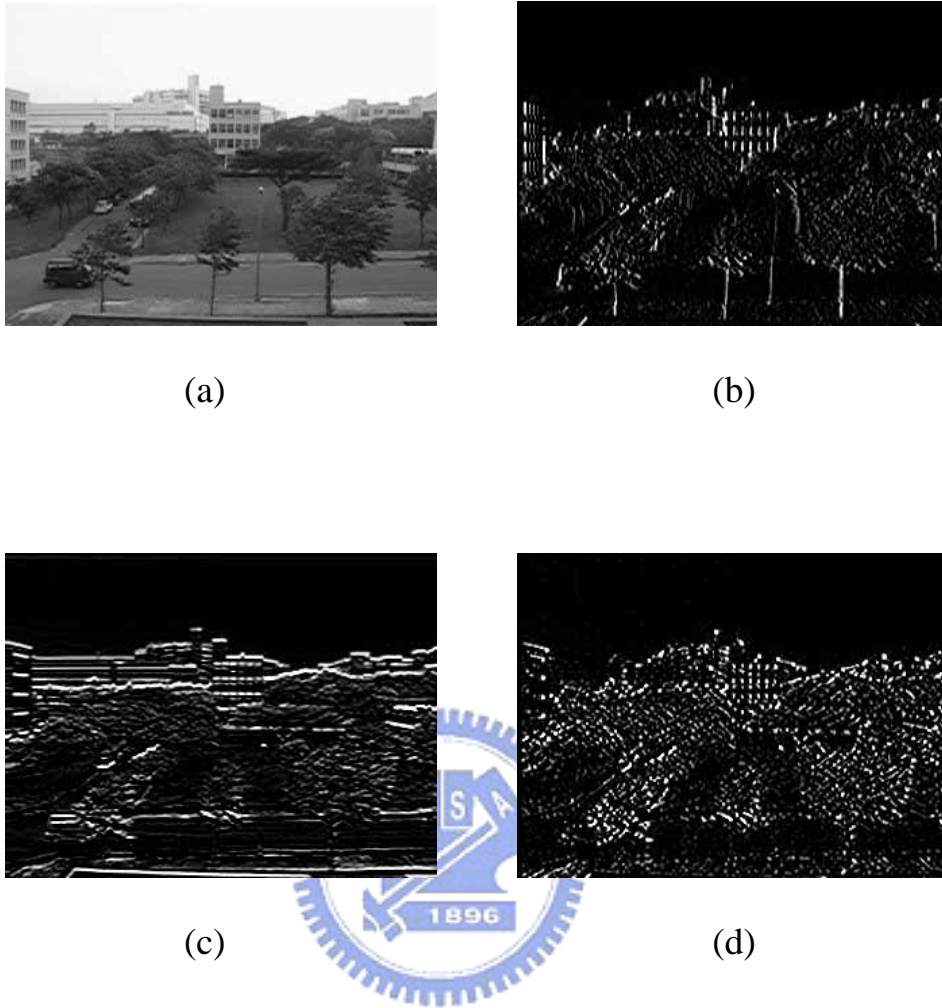


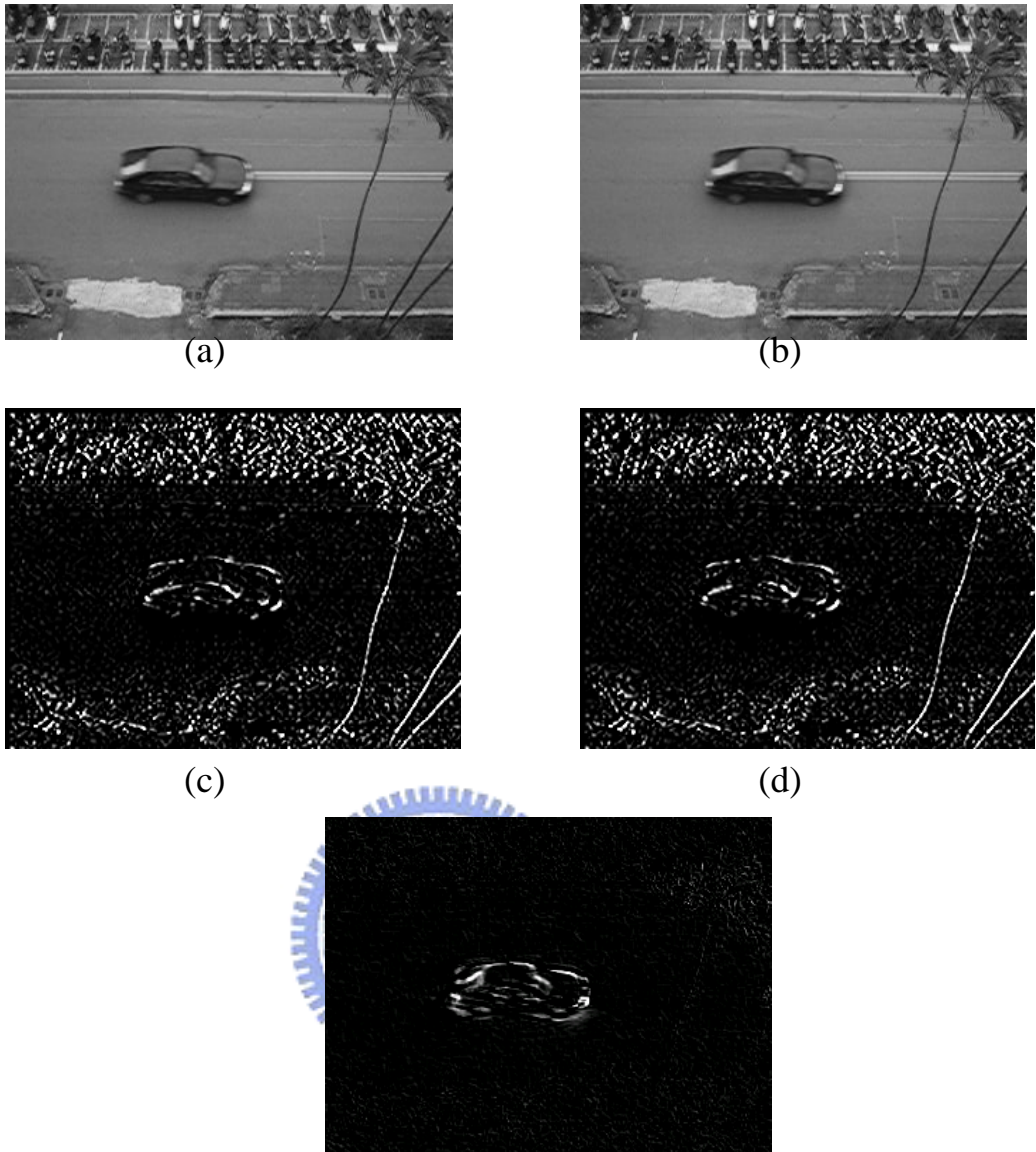
Figure 3-1 an example with Sobel operator

(a) Original image

(b)  $S_x$  mask can extract vertical edges

(c)  $S_y$  mask can extract horizontal edges

(d) Sobel operator, a 2D mask, includes  $S_x$  and  $S_y$



(e)  
Figure 3-2 an example with PDOE operator

(a) Original image  $I(x, y, k-1)$

(b) Original image  $I(x, y, k)$

(c) Sobel operator  $E(x, y, k-1)$

(d) Sobel operator  $E(x, y, k)$

(e) PDOE operator  $PDOE(x, y, k)$

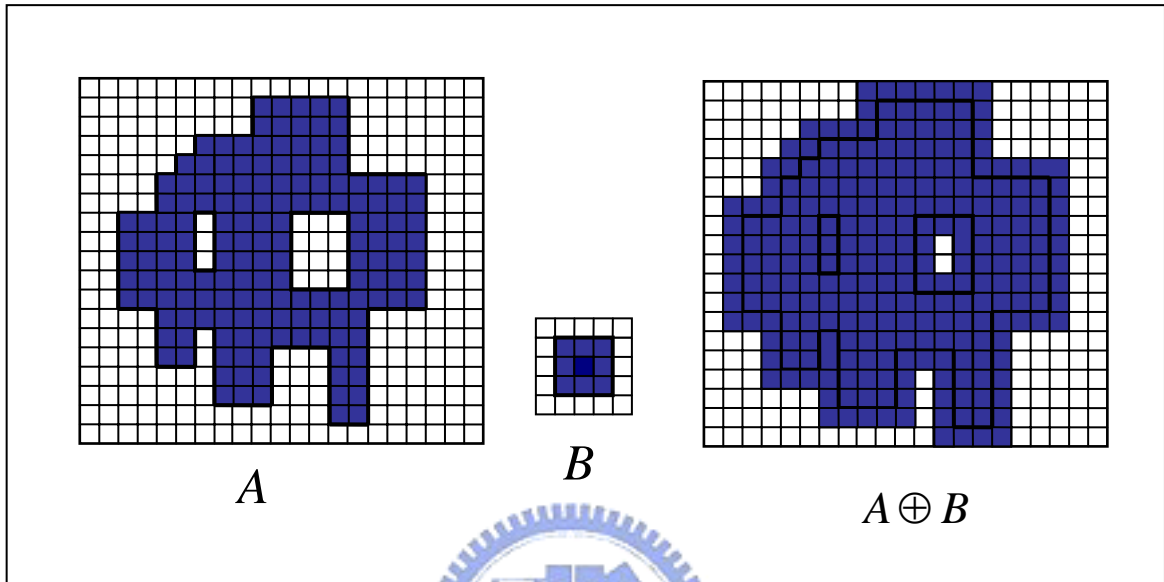


Figure 3-3 Dilation Operation

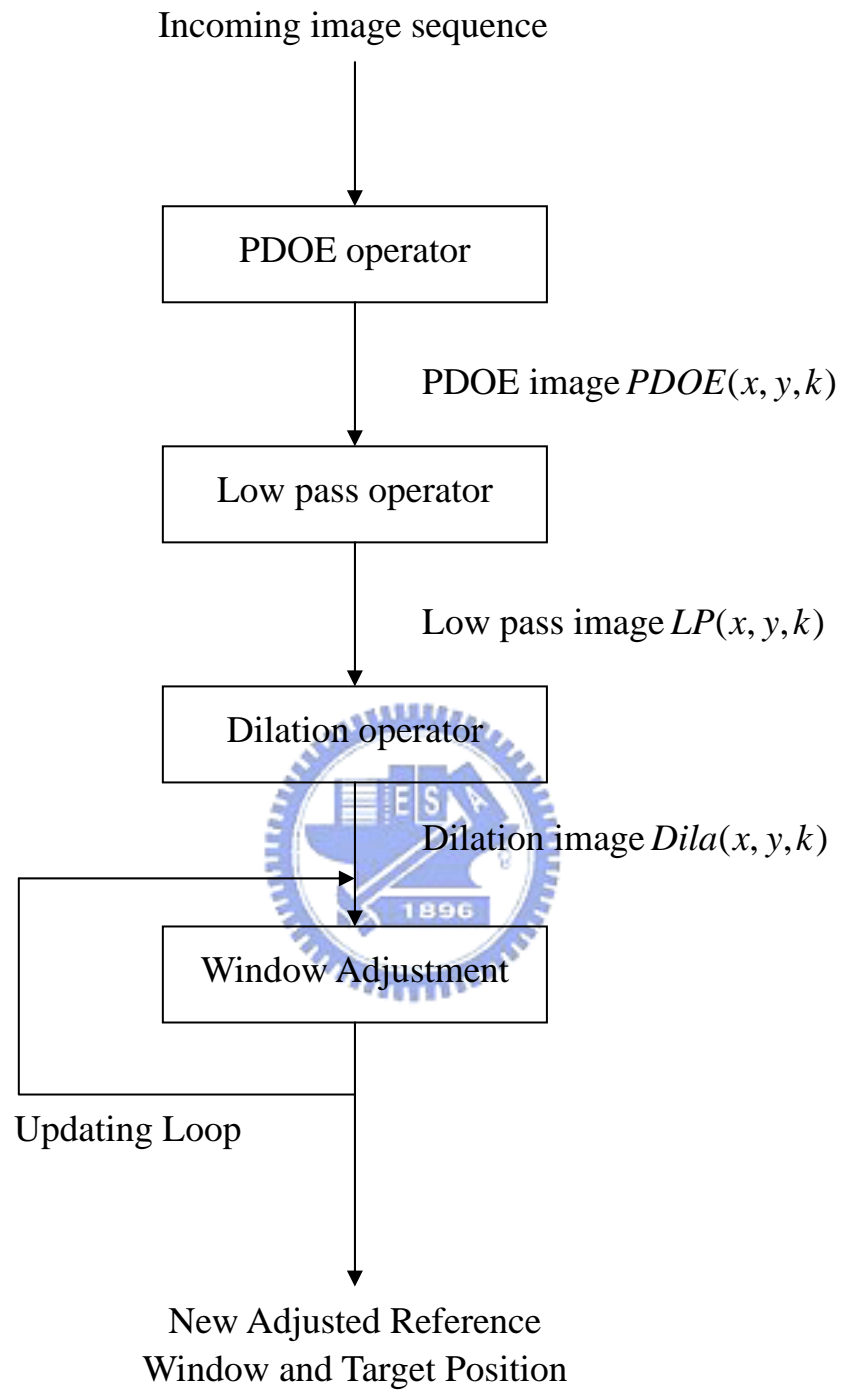


Figure 3-4 Overall structure of the target tracking



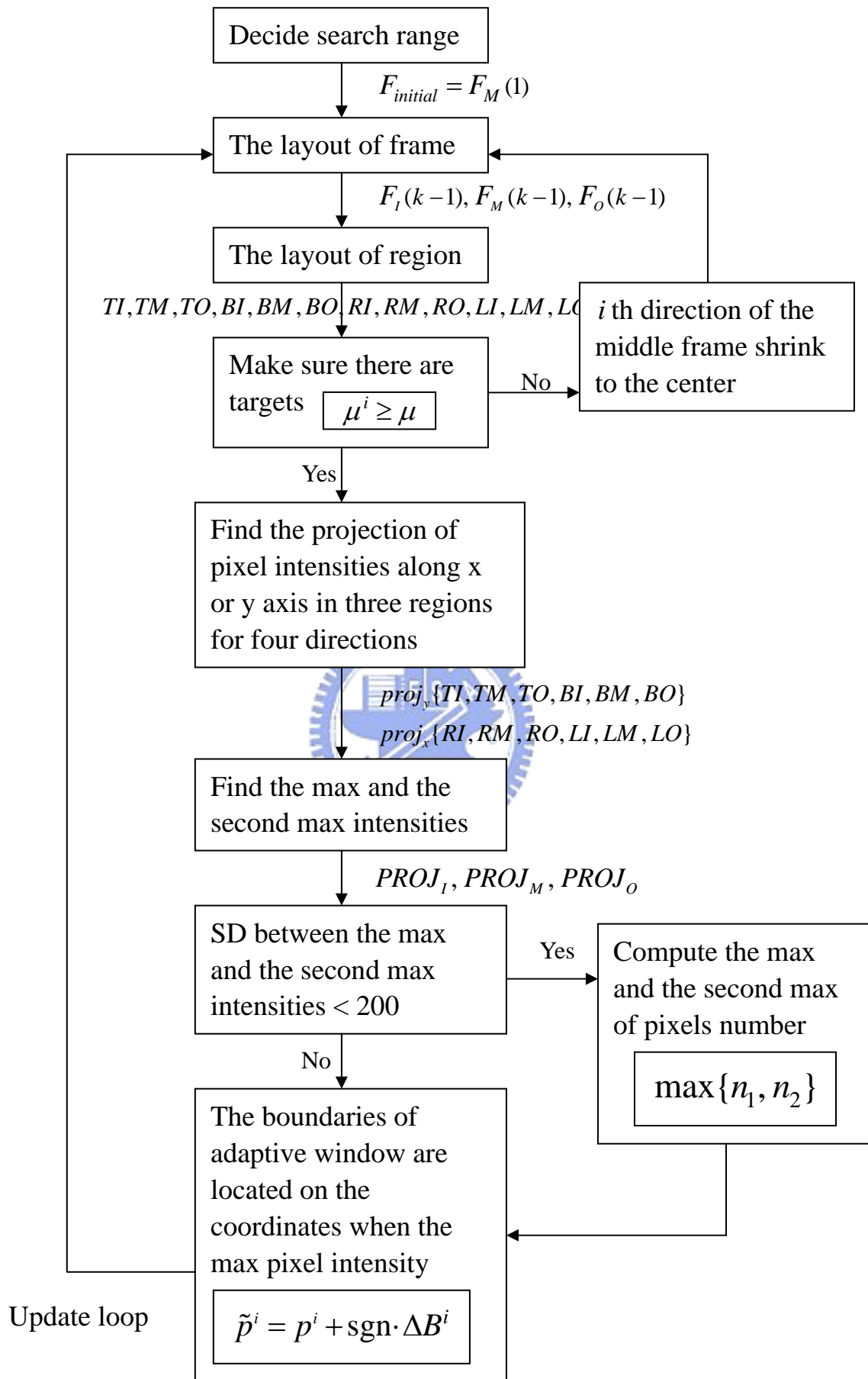


Figure 3-5 the flow chart of the adaptive window algorithm

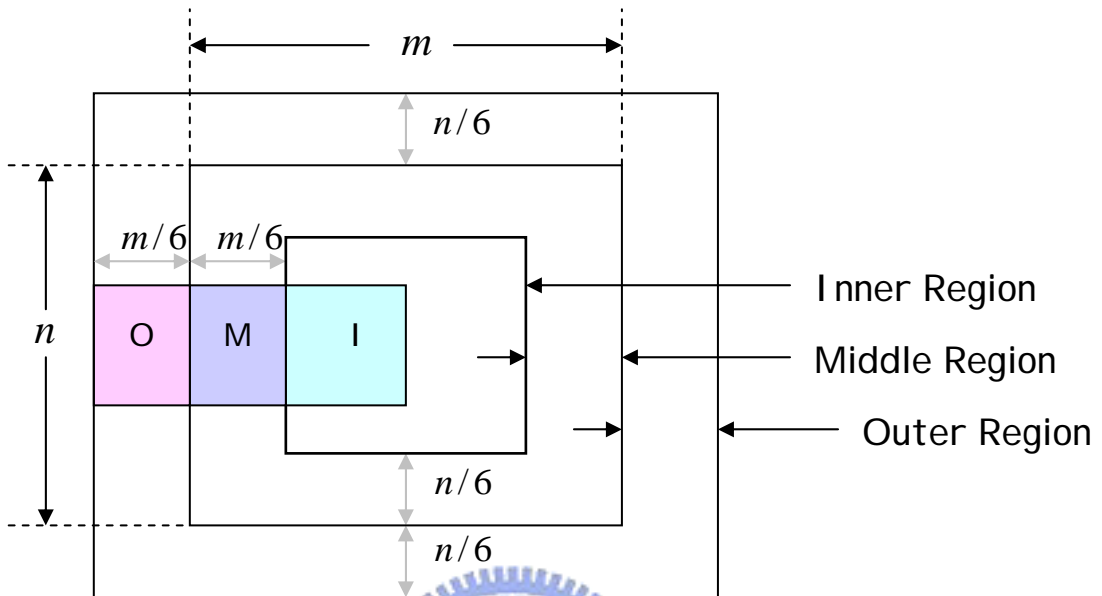


Figure 3-6 the layout of an outer frame and an inner frame and background frame.

Definitions of Inner, Middle, and Outer Regions for four directions

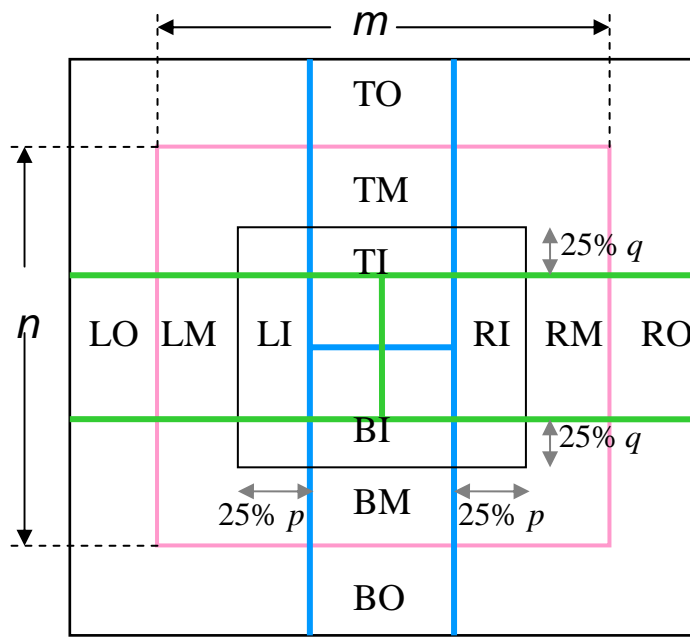


Figure 3-7 the layout of twelve districts

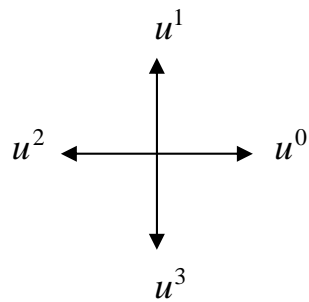


Figure 3-8 four reference unit vectors for four sides

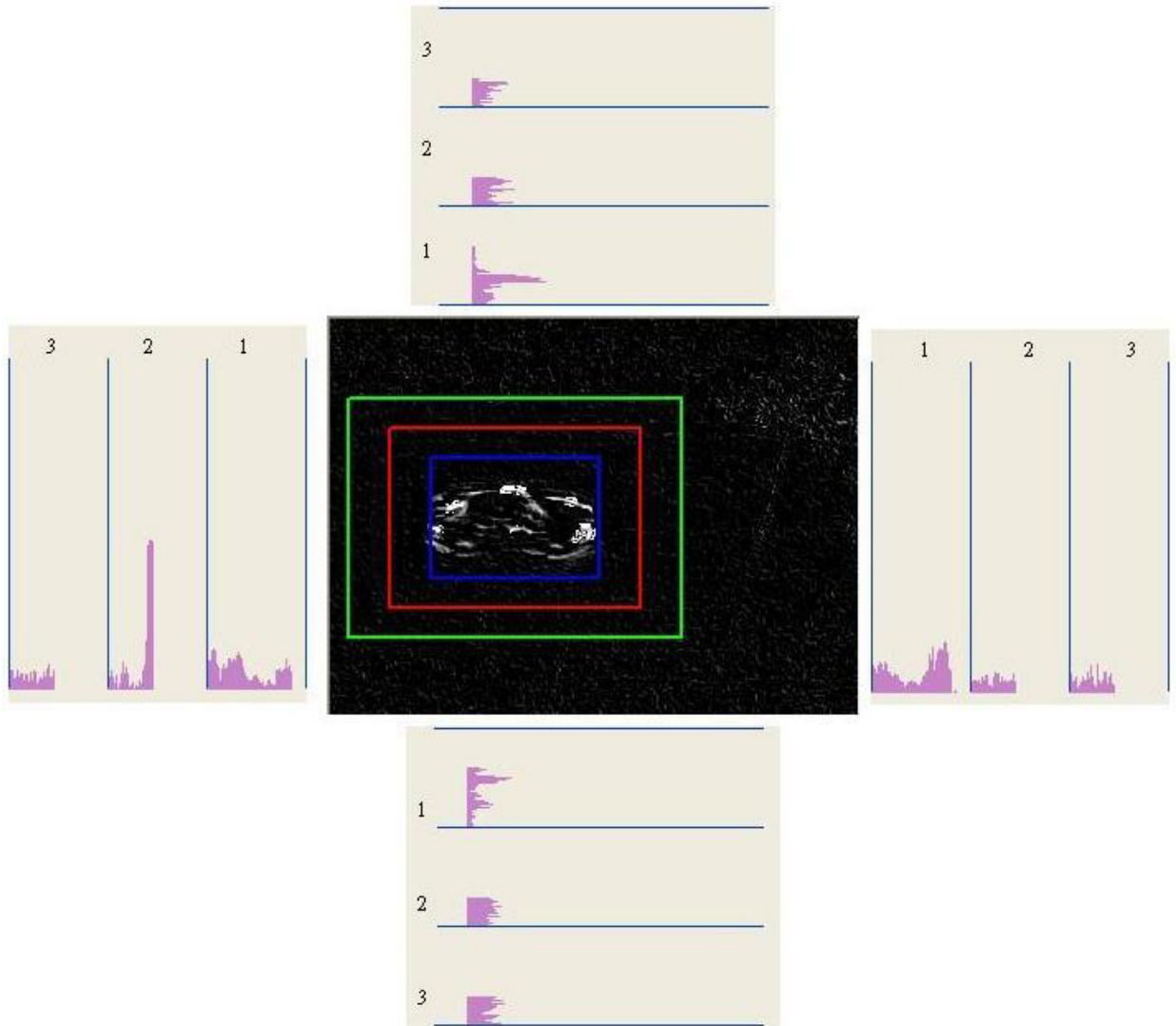


Figure 3-9 the projection analysis of each region

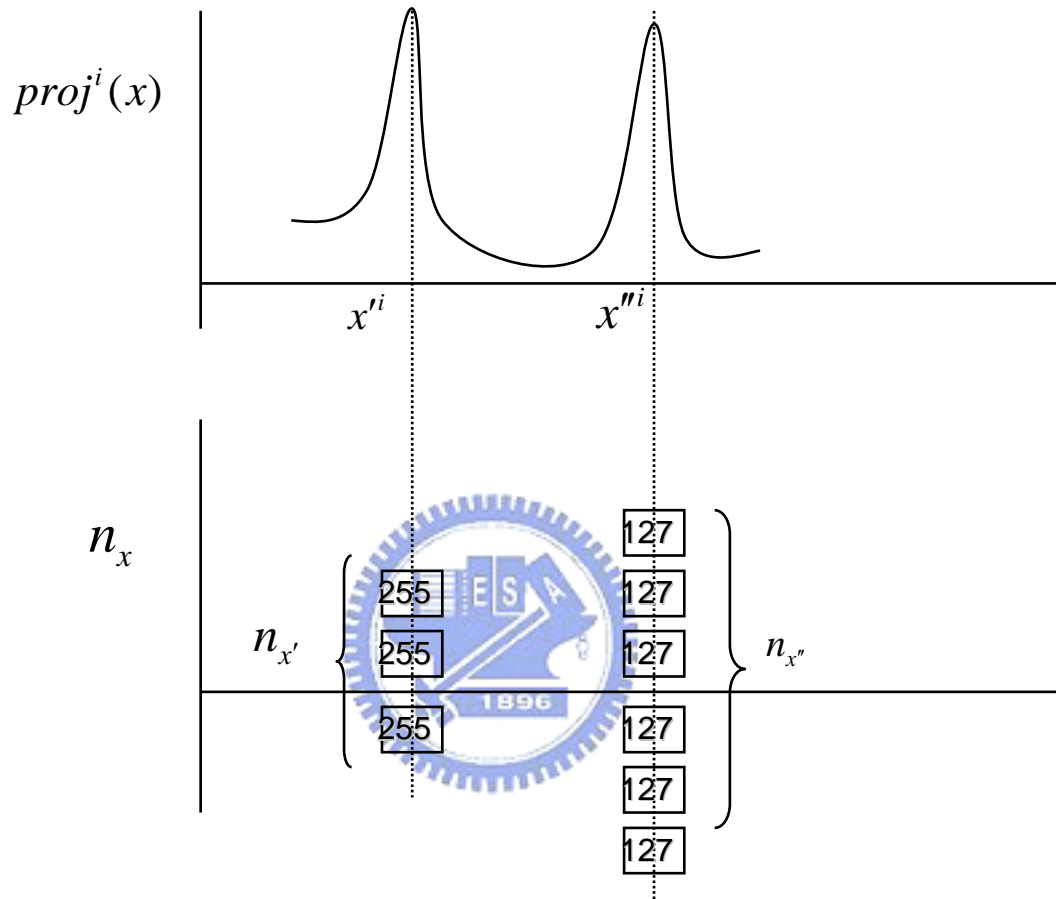


Figure 3-10 the second policy

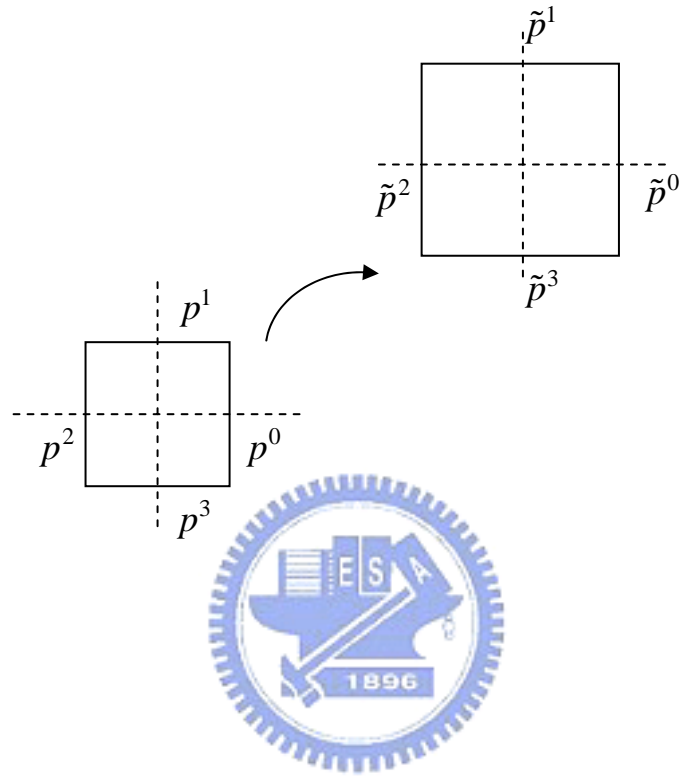


Figure 3-11 Tuning of tracking position for correcting the position change.  
 Positions before window sizing procedure and after window  
 sizing procedure

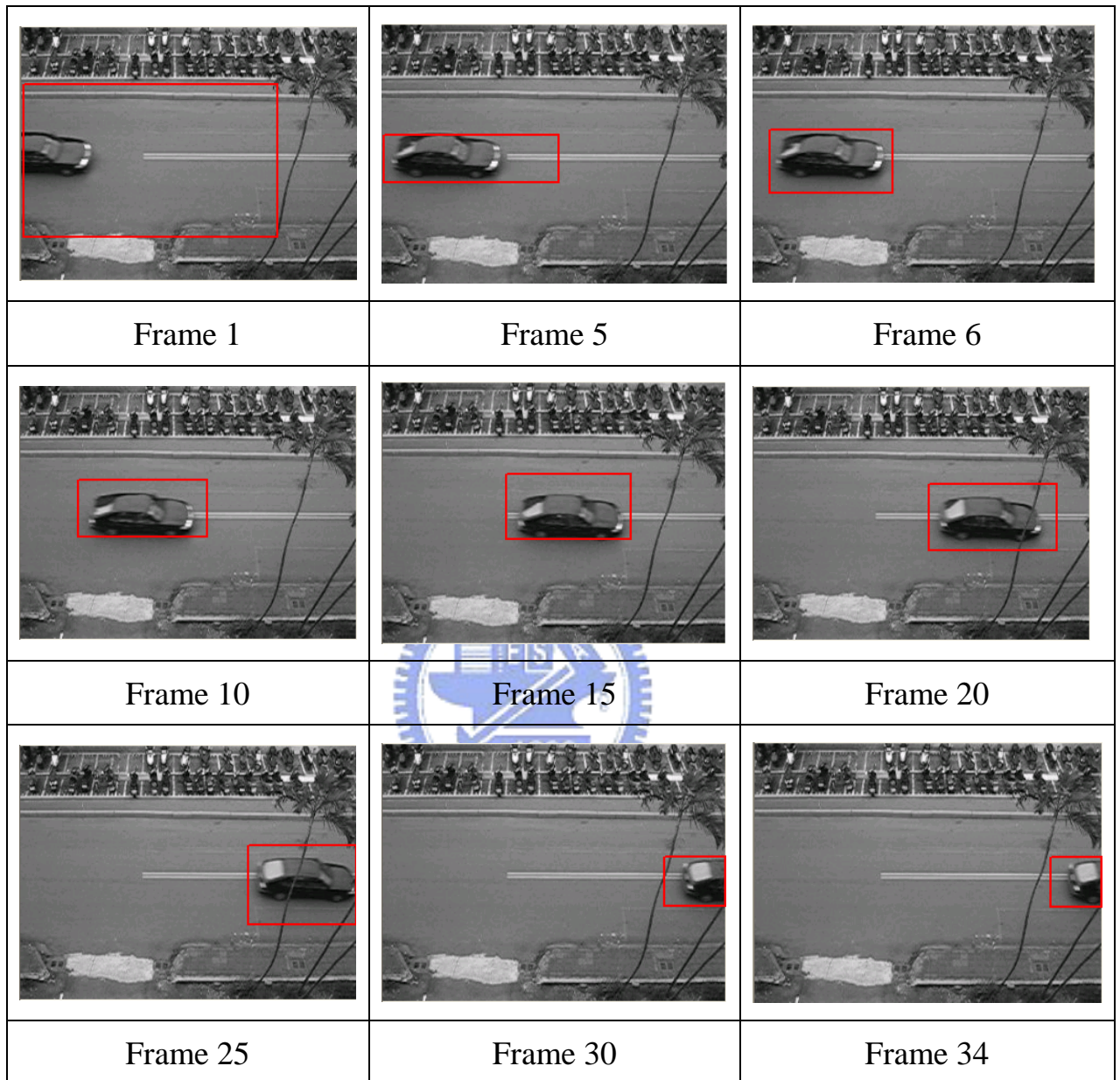


Figure 4-1 a translation and scale example for tracking with adaptive window.



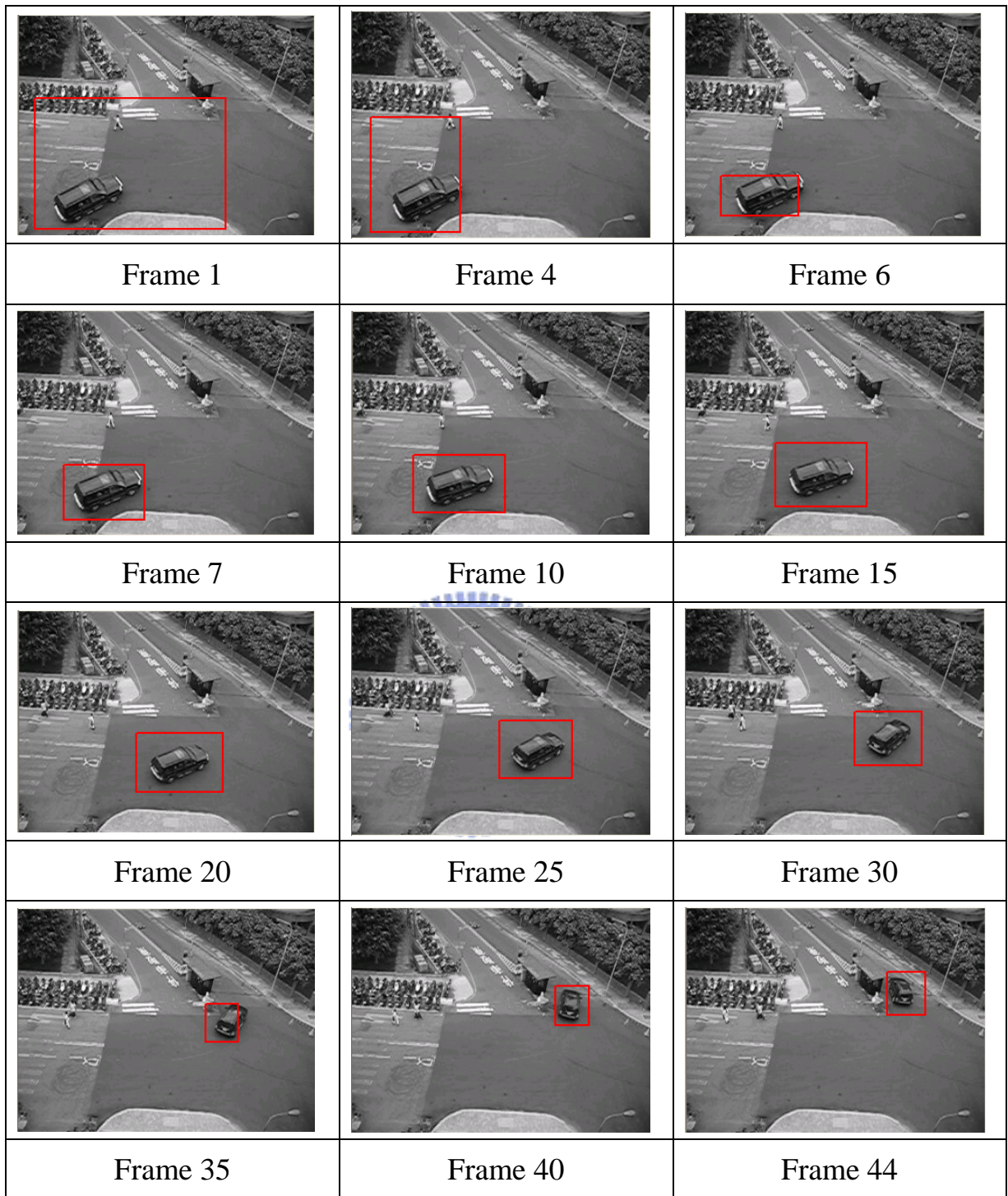


Figure 4-2 a translation, scale and rotation example for tracking with adaptive window.