

Probability Distribution Map and Kmean Cluster Technique

$I(x,y)$



Feature Vector X

X1	X2	X9	X10
X3	X11	X12	X13
X4	X5	X14	X15
X6	X7	X8	X16

=

Feature Map 1

X1	X2	X9	X10
X3	X11	X12	X13
X4	X5	X14	X15
X6	X7	X8	X16

Feature Map 2

X1	X2	X9	X10
X3	X11	X12	X13
X4	X5	X14	X15
X6	X7	X8	X16



Kmean
Cluster



Region
segmentation
result



Probability distribution
map

$$\text{Prob}(C1) = \frac{8}{16} = \frac{1}{2}$$

$$\text{Prob}(C2) = \frac{8}{16} = \frac{1}{2}$$

$$\text{Prob}(Ci) = \text{Prob}(Ci/Obj) \text{ Prob}(Obj) \quad \dots (1)$$

$$\text{Prob}(Ci/Obj) = \text{Prob}(Ci) / \text{Prob}(Obj) \quad \dots (2)$$



Application Example: Given ROI_i(x,y) with feature vector X, find it Prob(Ci/Obj) = ? by using equation (2)