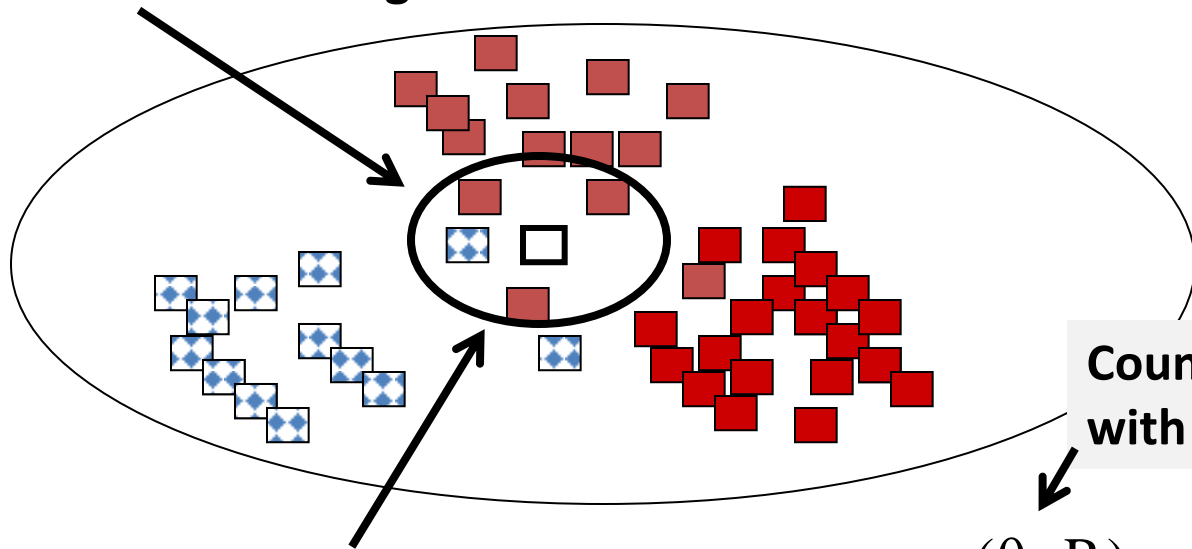# K-NN as an Estimate of p(Y|X)

Assume p(θ_i|d) is <u>locally smooth</u>, i.e., the same for all the d's in this region R

$p(\theta_i|d)= p(\theta_i|R)$

Count of d's in R with category θ_i

Estimate p(θ_i|R) based on the known categories in the region

$$p(\theta_i \mid R) = \frac{c(\theta_i, R)}{|R|}$$

Total # of docs in R

8