LVC 3 - Glossary of Notations

$\mathbf{X_i}$ = Vector containing values of input features corresponding to i^{th} record, where i ranges from 1 to n

$\mathbf{Y_i}$ = Value of output variable corresponding to i^{th}record

X_i= i^{th} component of a vector **X**

$\widehat{Y}$ = Predicted value of the output variable

E= Expected value or average

$\phi(X\ )$ = A transformed version of the feature vector X

$h(X\ )$= Non-linear classifier function

θ^T = Transpose of vector θ

μ_k = Mean vector for class k

C_k = Covariance matrix for class k

π_k= Probability of a data point belonging to class k. These are called **prior probabilities**

$N(\mu_k, C_k)$ = Normal distribution with mean $\mu_k$and covariance C_k

γ_k = Normalising constant for class k in the normal distribution equation

$P(Y = k \mid X)$ = Probability of data point belonging to class k given the input features X. These are called **posterior probabilities**

$P(X|Y = k)$ = Probability of X given the output class$Y = k$

C= When covariances of all the classes are the same

C_{def} = cost of someone being a defaulter

C_{lost} = cost of losing a customer

$\widehat{\pi_k} = \frac{Number\ of\ samples\ of\ class\ k}{Total\ number\ of\ samples}$ = Estimate of π_k

$\widehat{\mu_k}$ = Estimate of μ_k

$\widehat{C_k}$ = Estimate of C_k

$\widehat{\theta}$ = The weight vector

$L(data; \theta)$= Likelihood function of the observed data

γ = Regularization hyperparameter

w = Weight in the likelihood equation for unbalanced data

$||x||$ = Distance of point x from the origin

w = Weight in the distance equation/formula