1. Theoretical Tasks- **Loss Functions**

# Cross-Entropy Loss (or Logistic Loss)

H(y, g) = - (0 \* log(0.25) + (1 \* log(0.6) + (0 \* log(0.15))

H(y, g) = - (0 + log(0.6) + 0) #Using natural log

H(y, g) = - (-0.51)

**H(y, g) = 0.51**

# Mean Squared Error-Loss

n = 3

MSE(y, g) = (0.25 – 0)2 + (0.6 – 1)2 + (0.15 – 0)2 / 3

MSE(y, g) = (0.0625)+ (0.16)+ (0.0225) / 3

MSE(y, g) = 0.245 / 3

**MSE(y, g) = 0.0817**

# Hinge Loss (or SVM Loss)

SVM(y, j) = max(0, 0.25 – 0.6 + 1) + max(0, 0.15 – 0.6 + 1)

SVM(y, j) = max(0, 0.65) + max(0, 0.55)

SVM(y, j) = 0.65 + 0.55

**SVM(y, j) = 1.2**

# Links to GitHub (Practical):

[Advanced-Deep-Learning-D7047E/Practical\_2\_CIFAR10.ipynb at main · jamieomoya/Advanced-Deep-Learning-D7047E (github.com)](https://github.com/jamieomoya/Advanced-Deep-Learning-D7047E/blob/main/Exercise_2/Practical_2_CIFAR10.ipynb)

[Advanced-Deep-Learning-D7047E/Practical\_2\_MNIST.ipynb at main · jamieomoya/Advanced-Deep-Learning-D7047E (github.com)](https://github.com/jamieomoya/Advanced-Deep-Learning-D7047E/blob/main/Exercise_2/Practical_2_MNIST.ipynb)