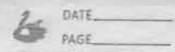
## AI - Assignment - 4

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Mean Squared Error (MSE):

$$\frac{\partial \Omega^{2}}{\partial \Gamma} = \frac{\mu}{1} \frac{1}{2} \left( \frac{\partial e^{2}}{\partial \Gamma} \cdot \frac{\partial e^{2}}{\partial e^{2}} \cdot \frac{\partial \alpha^{2}}{\partial e^{2}} \right)$$

$$e_i = y^i - \hat{g}^i$$

$$\hat{g}^i = \omega^T \cdot x^i$$

\* GRADIENT DEDATE RULE:

0 
$$\frac{\partial L}{\partial \omega_i} = -\frac{2}{2} \sum_{i=1}^{\infty} (y_i - \hat{y_i}) x_{i,i}$$

$$\Theta \frac{\partial L}{\partial \omega_{ij}} = -2 \sum_{i=1}^{N} (y_i - y_i^*) \times_{4,i}$$

\* VECTOR FORM :

$$\nabla_{\omega}L = \frac{2}{N} \times^{T} (X \omega - y)$$
  $\nabla_{b}L = \frac{2}{N} \sum_{i=1}^{N} (\omega^{T} z_{i} - y_{i})$ 

a) Weight w:

$$\omega' = \omega - \alpha \nabla_{\omega} L$$
 [ $\alpha : \text{leasting sate}$ ]
$$\omega' = \omega + 2\alpha \times \nabla(x\omega - y)$$

b) Bias b:  

$$b' = b - x \frac{\partial L}{\partial b}$$

$$= b - 2 \frac{h}{N} (\omega^{T} x^{T} - y^{T})$$