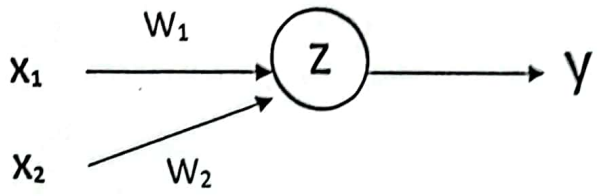
Quiz-3 (CLO3)
CS-470 Machine Learning
BEE-12

Name: Solution

Assume the following, network, find the weight update equation after solving the error backpropagation. Assume linear activation and desired output as y^* and mean square error.



$E = \frac{1}{2}(y^* - y)^2$.

$y = w_1 x_1 + w_2 x_2$

$z = w_1 x_1 + w_2 x_2$

$\partial E/\partial w = \partial E/\partial w_1 + \partial E/\partial w_2$.

$= -(y^* - y)\,\partial y/\partial w_1 + -(y^* - y)\,\partial y/\partial w_2$

$= -(y^* - y)\left[\partial y/\partial w_1 + \partial y/\partial w_2\right]$.

$= -(y^* - y)\left[x_1 + x_2\right]$.

$\delta = -(y^* - y)$

$w_1 = w_1 - \gamma \delta x_1$

$w_2 = w_2 - \gamma \delta x_2$