17KUA0554_ANN_P20_2.

20) Estimate the load at particular hour of the day (L(T)) based on previous hour load [L(T-1)] and load at same time but one day before [L(T-24)] using artificial neural network with one hidden layer using adaDelta optimizer.

Sample:

Sample	1 hour before	1 day before
1	4983.172	4713.811
2	4888.392	4689.026
3	5072.959	4944.256
4	5196.260	5571.463
5	5641.297	6150.213.
6		

step1: Read dataset, Set $\eta = 0.1$, $\gamma = 0.9$, epochs = 1, $m = 1, c = -1$, $\epsilon^2_{gm,0} = \epsilon^2_{gc,0} = 0$, $\epsilon^2_{c,0} = \epsilon^2_{m,0} = 0$, $\Delta m_0 = \Delta c_0 = 0$. $\epsilon = 10^{-8}$

step2: Set Iteration = 1

step3: Set Sample i = 1

step4: $\rightarrow g_{gm} = -(y_i^a - m x_i^a - c) x_i^a$

$g_m = -(4713.811 - (1 * 4983.172) - (-1)) * (4983.172)$

$g_m = +13,337,289.02$

$\rightarrow g_c = -(y_i^a - m x_i^a - c)$

$$g_c = -(4713.911 - (1 \times 4985.172) - (-1))$$

$$g_c = +268.361$$

Step 5: $\rightarrow \epsilon_m^2 = \lambda \epsilon_m^2 + (1-\lambda)(g_m)^2$

$$\epsilon_m^2 = 0.9 \times 0^2 + (1-0.9)(13,337,289.02)$$

$$\epsilon_m^2 = 1.278832728 \times 10^{13}$$

$\rightarrow \epsilon_c^2 = \lambda \epsilon_c^2 + (1-\lambda)(g_c)^2$

$$\epsilon_c^2 = 0.9 \times 0^2 + (1-0.9)(268.361)^2$$

$$\epsilon_c^2 = 7201.263$$

$\rightarrow \epsilon_{\Delta m}^2 = \lambda \epsilon_{\Delta m}^2 + (1-\lambda)[\Delta m]^2$

$$\epsilon_{\Delta m}^2 = 0.9 \times 0^2 + (1-0.9)(0)^2$$

$$\epsilon_{\Delta m}^2 = 0$$

$\rightarrow \epsilon_{\Delta c}^2 = \lambda \epsilon_{\Delta c}^2 + (1-\lambda)[\Delta c]^2$

$$\epsilon_{\Delta c}^2 = 0.9 \times 0^2 + (1-0.9)(0)^2$$

$$\epsilon_{\Delta c}^2 = 0$$

Step 6:

$$\rightarrow \Delta m = \frac{-\sqrt{\epsilon_{\Delta m}^2 + \varepsilon}}{\sqrt{\epsilon_{\Delta m}^2 + \varepsilon}} (g_m)$$

$$\Delta m_2 = \frac{-\sqrt{0 + 10^{-8}}}{\sqrt{1.8 \times 10^{13} + 10^{-8}}} \times (13,337,289.02)$$

$$\Delta m = -0.00031$$

→ $\Delta c = \frac{-\eta \sqrt{\epsilon_x^2 + \Sigma}}{\sqrt{\epsilon_{oc}^2 + \Sigma}} (q_c)$

$\Delta C = \frac{-\sqrt{0 + 10^9}}{\sqrt{7201.765 + 10^9}}$ (268.361)

$\Delta C = -$

→ $m = m + \Delta m$

$m = 1 - 0.000314 = 0.99$

→ $C = *C + \Delta C$

$C = -1 - 0.000316 = -1.00032$

Step-7: Sample = sample + 1

if sample $\leq n_s$

goto step 4

else

goto next step.

Step-8: iter = iter + 1

if iter $\leq$ epoch

goto step 3

else

goto next step