

Assignment - 11

18K4AD4FG

$$\begin{array}{r|l} 0.2 & 3.4 \\ \hline 0.4 & 3.8 \end{array}$$

Step-1: $m=1, c=+1, \eta=0.1, \text{epochs}=2, \theta=0.9, v_m=v_c=0.$

Step-2: $\text{iter}=1$

Step-3: $\text{sample}=1$

Step-4:
$$g_m = \frac{\partial E}{\partial m} = -(y_1 - (m + \theta v_m)x_1 - (c + \theta v_c))x_1$$
$$= -0.44$$

$$g_c = -(y_1 - (m + \theta v_m)x_1 - (c + \theta v_c)) = -0.2$$

Step-5:
$$v_m = \theta v_m - \eta g_m = 0.044$$

$$v_c = \theta v_c - \eta g_c = 0.02$$

Step-6: $m = m + v_m = 1.044, c = c + v_c = 1.02$

Step-7: $S = S + 1 = 1 + 1 = 2 \quad (2 > 2) \quad (\wedge)$

Step-4:
$$g_m = -(y_2 - (m + \theta v_m)x_2 - (c + \theta v_c))x_2$$
$$= -0.7794$$

Step-5:
$$g_c = -(y_2 - (m + \theta v_m)x_2 - (c + \theta v_c))$$
$$= -1.9425$$

Step-6:
$$v_m = 0.119$$
$$v_c = 0.392$$

Step-7:
$$m = m + v_m = 1.16$$
$$c = c + v_c = 1.41$$

Step-7: $S = S + 1 = 3 > 2$ (✓)
goto next-step.

Step-8: $iter = iter + 1 = 1 + 1 = 2$ ($2 > 2$) → (✗)

Step-3: $sample = 1$

Step-4: $g_m = \frac{\partial E}{\partial m} = -(y_1 - (m + 2v_m)x_1 - (c + 2v_c))x_1 = -0.236$

$$g_c = -(y_1 - (m + 2v_m)x_1 - (c + 2v_c)) = -1.728$$

Step-5: $v_m = 2v_m - \eta g_m = 0.129$

$$v_c = 2v_c - \eta g_c = 0.471$$

Step-6: $m = m + v_m = 1.290$

$$c = c + v_c = 2.084$$

Step-7: $S = S + 1 = 2$ ($2 > 2$) (✗)

Step-4: $g_m = -(y_2 - (m + 2v_m)x_1 - (c + 2v_c))x_2 = -0.2912$

$$g_c = -0.728$$

Step-5: $v_m = 2v_m - \eta g_m = 0.145$

$$v_c = 2v_c - \eta g_c = 6.49$$

Step-6: $m = m + v_m = 1.43$

$$c = c + v_c = 2.58$$

Step-7: $S = S + 1 = 3 > 2$ (goto next-step)

Step-8: $iter = iter + 1 = 3 > 2$ (goto next step)

Step-9: Print m, c .