ASSIGNMENT - 15

18K41A0247

RMS Prop optimizes

Sample (i)	x_i^a	y_i^a
1	0.2	3.4
2	0.4	3.8
3	0.6	4.2
4	0.8	4.6

Step 1: (x, y), $\eta = 0.1$ epochs = 2, m = 1, c = 1, $\beta = 0.9$,

$E_m = E_c = 0$ $\varepsilon = 10^{-8}$

step 2: itr = 1

step 3: Sample = 1

step 4: $g_m = -[3.4 - (1)(0.2) + 1](0.2) = -0.84$

$g_c = -[3.4 - (1)(0.2) + 1] = -4.2$.

step 5: $E_m = (0.9)(0) + (1-0.9)(-0.84)^2 = 0.07$

$E_c = (0.9)(0) + (1-0.9)(-4.2)^2 = 1.764$

step 6: $\Delta m = \frac{-0.1}{\sqrt{0.07 + 10^{-8}}} * (-0.84) = 0.31$

$\Delta c = \frac{-0.1}{\sqrt{1.764 + 10^{-8}}} * (-4.2) = 0.31$

step 7: $m = m + \Delta m = 1 + 0.31 = 1.31$

$c = c + \Delta c = -1 + 0.31 = -0.69$

Step 8: Sample = 1 + 1 = 2

step 9: If (Sample <= n)

2 > 2

Step 4: $g_m = -[3.8 - (1.31)(0.4) + 0.69](0.4)$

$g_m = -1.5$

$g_c = -[3.8 - (1.31)(0.4) + 0.69]$

$g_c = -3.9$

Step 5: $E_m = (0.9)(0.07) + (0.1)(-1.5)^2 = 0.28$

$E_c = (0.9)(1.76) + (0.1)(-3.9)^2 = 3.1$

Step 6: $\Delta m = \frac{-0.1}{\sqrt{0.28 + 10^{-8}}} \times -1.5 = 0.28$

$\Delta c = \frac{-0.1}{\sqrt{3.1 + 10^{-8}}} \times -3.9 = 0.22$

Step 7: $m = m + \Delta m = 1.31 + 0.28 = 1.59$

$c = c + \Delta c = -0.69 + 0.22 = -0.47$

Step 8: sample = s + 1 = 2

Step 9: if (sample > ns)

$3 > 2$

Step 10: itr = itr + 1 = 1 + 1 = 2

Step 11: if (itr > epoch)

$2 > 2$

Step 3: sample = 1

Step 4: $g_m = -[3.4 - (1.59)(0.2) + 0.47](0.2)$

$g_m = -0.7$

$g_c = -[3.4 - (1.59)(0.2) + 0.47]$

$g_c = -3.5$

Step 5: $E_m = (0.9)(0.28) + (0.1)(-0.7)^2 = 0.3$

$E_c = (0.9)(3.1) + (0.1)(-3.5)^2 = 4.0$

Step 6: $\Delta m = \frac{-0.1}{\sqrt{0.3 + 10^{-8}}} \times -0.7 = 0.12$

$\Delta c = \frac{-0.1}{\sqrt{4.0 + 10^{-8}}} \times -3.5 = 0.17$

Step 7: $m = m + \Delta m = 1.59 + 0.12 = 1.71$

$c = c + \Delta c = 0.47 + 0.17 = -0.3$

Step 8: Sample = Sample +1 = 1 + 1 = 2

Step 9: If (Sample > ns)

$2 > 2$

Step 10: $g_m = -[3.8 - (1.71)(0.4) + 0.3](0.4)$

$g_m = -1.4$

$g_c = -[3.8 - (1.71)(0.4) + 0.3]$

$g_c = -3.6$

Step 5: $E_m = (0.9)(0.3) + (0.1)(-1.4)^2 = 0.46$

$E_c = (0.9)(4.0) + (0.1)(-3.6)^2 = 4.89$

Step 6: $\Delta m = \frac{-0.1}{\sqrt{0.46 + 10^{-8}}} * -1.4 = 0.2$

$\Delta c = \frac{-0.1}{\sqrt{4.89 + 10^{-8}}} * -3.6 = 0.16$

Step 7: $m = m + \Delta m = 1.71 + 0.2 = 1.91$

$c = c + \Delta c = -0.3 + 0.16 = -0.14$

Step 8: Sample = Sample + 1 = 2 + 1 = 3

Step 9: if (sample > hs)

3 > 2

Step 10: ito = ito + 1 = 2 + 1 = 3

Step 11: if (ito > epoch)

3 > 2

Step 12: m = 1.91

c = -0.14