Assignment - 11

using NAG optimiser

step 1: [x, y], m=1, c=-1, η=0.1, epochs = 2,

γ=0.9, Vm = Vc = 0, ns=2

step 2: iter=1

step 3: sample=1

step 4: $gm = \frac{\partial \epsilon}{\partial m} = -(y_i - (m+\gamma m)x_i - (c+\gamma v_c))x_i$

$= -0.84$

$gc = -4.2$

step 5: $Vm = \gamma Vm - \eta gm$

$= (0.9)0 - (-0.1) \times (-0.84) = 0.084$

$Vc = \gamma Vc - \eta gc \Rightarrow -0.42$

step 6: $m += Vm = 1 - 0.084 = 0.916$

$c += Vc = -1 - 0.42 = -1.42$

step 7: sample += 1 $\Rightarrow 1+1=2$

step 8: if (sample > ns) : go to step 9

else: go to step 4

step 4: $gm = \frac{\partial \epsilon}{\partial m} = -1.983$

$gc = \frac{\partial \epsilon}{\partial c} = -4.959$

step 5 : $V_m = \gamma v_m - \eta g_m$

$= (0.9 \times -0.084) - (-0.1 \times -1.983) \Rightarrow -0.2739$

$V_c = -0.8739$

step 6 : $m_t = V_m = 0.916 - 0.2739 = 0.6421$

$c_t = V_c = -1.142 - 0.8739 = -2.2939$

step 7 : Sample + 1 = 1 $\Rightarrow$ 2 + 1 = 3

step 8 : if (sample > ns) : go to step 9

else : go to step 4

step 9 : itr + 1 => 1 + 1 = 2

step 7 : sample t = 1 $\Rightarrow$ 1 + 1 = 2

step 8 : if (sample > ns) : go to step 9

else : go to step 4

step 4 : $g_m = \frac{\partial \epsilon}{\partial m} = -(3.8 - (0.279 + (0.9 \times -0.3627)) \times$

$0.4 - (-3.6646 + 10.9)$

$= -2.985$

$g_c = \frac{\partial \epsilon}{\partial c} = -7.4645$

step 5 : $V_m = -0.6249$ $V_c = -1.9800$

step 6 : $m_t = V_m = 0.2974 + (-0.6249) = -0.3275$

$c_t = V_c = -3.6646 - 1.9800 = -4.6446$

step 7: sample += 1 ⇒ 2+1=3

step 8: if (sample > ns): go to step 9

else: go to step 4

step 9: itr += 1 ⇒ 2+1=3

step 10: if (itr = epochs): go to step 4

else: go to step 3

step 11: print m, c

m = 0.3275

c = -4.6446

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