Assignment 7

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| Date | Time | Load (kW) |
|---|---|---|
| 01.09.2018 | 0:00 | 5551.822 |
| 01.09.2018 | 1:00 | 4983.172 |

Since, the load has to predicted based on the same hour load in the previous day, the dataset has to be modified.

| Day-1 (x) | Day-2 (y) |
|---|---|
| 5551.82208 | 4931.26380 |
| 4983.17184 | 4775.53968 |

**Step1:** Read dataset, $\eta = 0.1$, epochs = 2, $m = 1$, $c = -1$, $\gamma = 0.9$, $v_m = 0$ and $v_c = 0$

**Step2:** Set iteration = 1

**Step3:** Set sample $i = 1$

**Step4:** $y = (1)(5551.82208) - 1 = 5550.82208$

**Step5:** $\frac{\partial E}{\partial m} = -\left(\frac{5550.82208}{4931.26380} - 1(5551.82208) + 1\right) 5551.82208$

$$\frac{\partial E}{\partial m} = 3439677.338750$$

$$\frac{\partial E}{\partial c} = -\left(4931.26380 - 1(5551.82208) + 1\right)$$

$$\frac{\partial E}{\partial c} = 619.55828$$

Step6: $V_m = 0.9(0) - (0.1)(343677.338750)$

$V_m = -343967.733875$

$V_c = 0.9(0) - (0.1)(619.55828)$

$V_c = -61.95583$

Step7: $m = 1 + (-343967.733875) = -343966.733875$

$c = -1 + (-61.95583) = -62.95583$

Step8: sample $i = i + 1 = 2$

Step9: $Y = (-343966.734)(4983.17184) + (-62.95583)$

$Y = -1714045405.72$

Step10: $\frac{\partial E}{\partial m} = -((4775.53968 - 1714045405.72 - (-343966.734)(4983.17184) - (-62.95583))(4983.17184)$

$\frac{\partial E}{\partial m} = -(4775.53968 + 1714045405.72)(4983.17184)$

$\frac{\partial E}{\partial m} = -8541406595607.112$

$\frac{\partial E}{\partial c} = -1714050181.261$

Step11: $V_m = 0.9(-343967.734) - (0.1)(-8541406595607.112)$

$V_m = -854140969131.67$

$V_c = 0.9(-61.95583) - (0.1)(-1714050181.261)$

$V_c = -171405073.88634$

Step 12: $m = -343966.734 - 854140969131.67$

$m = -854141313098.4$

$C = -62.95583$

Step 13: Iteration + 1 = 2, Sample = 1

Step 14: $Y = (-854141313098.4)(5551.82208) + (-62.95583)$

$Y = -4.74204060146E15$

Step 15: $\frac{\partial E}{\partial m} = -(4931.26380 + 4.74204060146E15)(5551.82208)$

$= -2.63269657156E19$

$\frac{\partial E}{\partial c} = -4.74204060150E15$

Step 16: $V_m = (0.9)(-854140969131.67) - (0.1)(-2.63269657156E19)$

$= 2.63269458e18$

$V_c = (0.9)(-171405073.88634) - (0.1)(-4.74204060150E15)$

$= 4.74203906E14$

Step 17 : $m = -85414131309\text{B}\cdot4 + 2.6326958E18$

$= 2.63269495E18$

$c = -62.95583 + 4.74203906E14$

$= 4.74203906e14$

Step 18 : sample $= i+1 = 2$

Step 19 : $Y = (2.63269495E18)(4983.17184) + 4.74203906E14$

$Y = 1.31191718E22$

Step 20 : $\frac{\partial E}{\partial m} = -((4775.53968 - (2.63269495E18)(4983.17184) - 4.74203906E14))(4983.17184)$

$= -(4775.53968 - 1.31191718E22)(4983.17184)$

$= -6.53750875E25$

$\frac{\partial E}{\partial c} = -(4775.53968 - 1.31191718E22)$

$= -1.31191718E22$

Step 21 : $V_m = (0.9)(2.6326958E18) - (0.1)(-6.53750875E25)$

$= 6.53751112E24$

$V_c = (0.9)(4.74203906E14) - (0.1)(-1.31191718E22)$

$= 1.31191761e21$

Step 22: $m = 2.6326949495E18 + 6.5375111 2E24$

$$\boxed{m = 6.537513755E24}$$

$c = 4.74203906E14 + 1.31191761E21$

$$\boxed{c = 1.31191808E21}$$