

# Assignment 6-A

price	sqft - living
221900	1180
538000	2970
180000	770
604000	1960

Sample set 1 / batch 1

price(y)	sqft - living(x)
221900	1180
538000	2970

Sample set 2 / Batch 2

price (y)	sqft living(x)
180000	770
604000	1960

1)  $\eta = 0.1$ , epochs = 1,  $m = 1$  and  $C = -1$ ,  $n = 2$

2) set iteration = 1

3) set batch = 1

$$4) \frac{\partial E}{\partial m} = -(0.5) [(221900 - 1, 1180 + 1) * 1180 + (538000 - 1, 2970 + 1) * 2970]$$

$$= -(0.5) (1636508450)$$

$$= -818254225$$

$$\begin{aligned}\frac{\partial E}{\partial c} &= -(0.5) [(221900 - 1 \cdot 1180 + 1) + (533000 - 1 \cdot 2970 + 1)] \\ &= -(0.5) (758152) \\ &= -378076\end{aligned}$$

$$\begin{aligned}5) \text{ step length } \Delta m &= -(0.1) (-818254225) \\ &= 81825422.5 \\ \Delta c &= -(0.1) (-378076) \\ &= 37807.6\end{aligned}$$

$$\begin{aligned}6) \text{ update } n &= 1 + 81825422.5 \text{ and } c = -1 + 37807.6 \\ m &= 81825423.5 \text{ and } c = 37806.6\end{aligned}$$

$$\begin{aligned}7) \text{ Set batch } i &= i + 1 \\ &= 2 \\ \text{and } i &= 2\end{aligned}$$

Repeat 4:

$$\begin{aligned}\frac{\partial E}{\partial m} &= -(0.5) [(180000 - 81825423.5 \times 770 - 37806.6) \\ &\quad \times 770 + (604000 - 81825423.5 \\ &\quad \times 1960 - 37806.6) \times 1960] \\ &= -(0.5) [-3-10532013e^{14}] \\ &= 1.55266047e^{14}\end{aligned}$$

Repeat 5:

$$\text{step length } \Delta m = -(0,1) (1,55266047e^{14})$$

$$= -1,55260047e^{13}$$

$$\Delta c = -(0,1) (8,33399489e^{10})$$

$$= -8,33399489e^9$$

Repeat 6 :-

$$m = 81825423,5 - 1,55266049$$

$$m = -1,55265229e^{13}$$

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$$c = 37806,6 - 8,33399489$$

$$c = -8,33395708e^9$$