19K41A0517

ARTIFICIAL INTELLIGENCE

ASSIGNMENT-6

$$E = \frac{1}{2}(y_i - m_1 x_i^2 - m_2 x_i - c)^2$$

$$\frac{\partial E}{\partial m_1} = -x_i^2(y_i - m_1 x_i^2 - m_2 x_i - c)$$

$$\frac{\partial E}{\partial m_2} = -x_i(y_i - m_1 x_i^2 - m_2 x_i - c)$$

$$\frac{\partial E}{\partial c} = -(y_i - m_1 x_i^2 - m_2 x_i - c)$$

$m_1 = 15$, $m_2 = 5$, $c = 10$, learning rate $= 0.01$, epochs $= 1$

Sample 1:

$\Delta m_1 = -x_1^2(y_1 - m_1 x_1^2 - m_2 x_1 - c)$

$= 43747.424$

$\Delta m_2 = 5756.24$

$\Delta c = 757.4$

$m_1 = -422.47$

$m_2 = -52.56$

$c = 2.426$

Sample 2:

$\Delta m_1 = -1101028.135$

$\Delta m_2 = -155074.3852$

$\Delta c = -21841.4627$

$m_1 = 1058781$

$m_2 = 1498.18$

$c = 215.98$