model polinomu $h_\theta(x) = \theta_0 + \theta_1 x$ 2. ve 3. iterasyon hesaplama

$\theta_0 = 0.2$ $\theta_1 = 0.26$ $\alpha = 0.1$

x	$h_\theta(x)$	y	Hata
0	$0.2 + 0.26 \cdot 0 = 0.2$	1	-0.8
1	$0.2 + 0.26 \cdot 1 = 0.46$	2	-1.54
2	$0.2 + 0.26 \cdot 2 = 0.72$	3	-2.28

Ortalama maliyet $J(\theta) = \frac{1}{2n} \sum_{i=1}^{m} (h_\theta(x_i) - y_i)^2$

$J(\theta) = \frac{1}{6} ((-0.8)^2 + (-1.54)^2 + (-2.28)^2) = \frac{8.21}{6}$

$\theta_3 = \theta_5 - \alpha \frac{\partial J(\theta)}{\partial \theta_5}$

$\frac{\partial J(\theta)}{\partial \theta_0} = \frac{1}{m} \sum_{i=1}^{m} (\theta_0 + \theta_1 x_i - y_i) \cdot 1 = \frac{1}{3} [(-0.8) + (-1.54) + (-2.28)] = -1.54$

$\frac{\partial J(\theta)}{\partial \theta_1} = \frac{1}{m} \sum_{i=1}^{m} (\theta_0 + \theta_1 x_i - y_i) \cdot x_i = \frac{1}{3} [(-0.8) \cdot 0 + (-1.54) \cdot 1 + (-2.28) \cdot 2] = -2.3$

$\theta_0 = 0.2 - (0.1) \cdot (-1.54) = 1.74$

$\theta_1 = 0.26 - (0.1) \cdot (-2.3) = 2.56$

} 2. iterasyon yeni θ_0 ve θ_1 değerleri

Yeni $\theta_0 = 1.74$ $\theta_1 = 2.56$ //

x	$h_\theta(x)$	y	Hata
0	$1.74 + 2.56 \cdot 0 = 1.74$	1	0.74
1	$1.74 + 2.56 \cdot 1 = 4.3$	2	2.3
2	$1.74 + 2,56 \cdot 2 = 6.86$	3	3.86

$J(\theta) = \frac{1}{6} ((0.74)^2 + (2.3)^2 + (3.86)^2) = \frac{20.7372}{6} = 3.4562$

$\frac{\partial J(\theta)}{\partial \theta_0} = \frac{1}{m} \sum_{i=1}^{m} (\theta_0 + \theta_1 x_i - y_i) \cdot 1 = \frac{1}{3} [(0.74) + (2.3) + (3.86)] = 2.3$

$\frac{\partial J(\theta)}{\partial \theta_1} = \frac{1}{m} \sum_{i=1}^{m} (\theta_0 + \theta_1 x_i - y_i) \cdot x_i = \frac{1}{3} [(0.74) \cdot 0 + (2.3) \cdot 1 + (3.86) \cdot 2] = 3.34$

$\theta_0 = 1.74 - (0.1) \cdot (2.3) = 1.51$

$\theta_1 = 2.56 - (0.1) \cdot (3.34) = 2.226$

} 3. iterasyon yeni θ_0 ve θ_1 değerleri

Yeni $\theta_0 = 1.51$ $\theta_1 = 2.226$ //

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