Gradient Descent For Multiple Variables

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The gradient descent equation itself is generally the same form; we just have to repeat it for our 'n' features:

repeat until convergence: {
$$\theta_{0} := \theta_{0} - \alpha \frac{1}{m} \sum_{i=1}^{m} (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_{0}^{(i)}$$

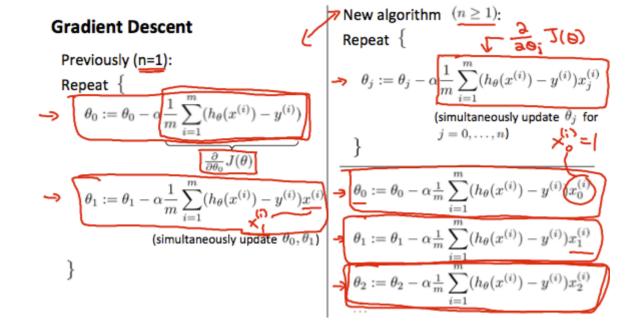
$$\theta_{1} := \theta_{1} - \alpha \frac{1}{m} \sum_{i=1}^{m} (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_{1}^{(i)}$$

$$\theta_{2} := \theta_{2} - \alpha \frac{1}{m} \sum_{i=1}^{m} (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_{2}^{(i)}$$
...
}

In other words:

```
repeat until convergence: { \theta_j := \theta_j - \alpha \, \frac{1}{m} \sum_{i=1}^m (h_\theta(x^{(i)}) - y^{(i)}) \cdot x_j^{(i)} \qquad \text{for j} := 0...n} }
```

The following image compares gradient descent with one variable to gradient descent with multiple variables:



✓ Completado





