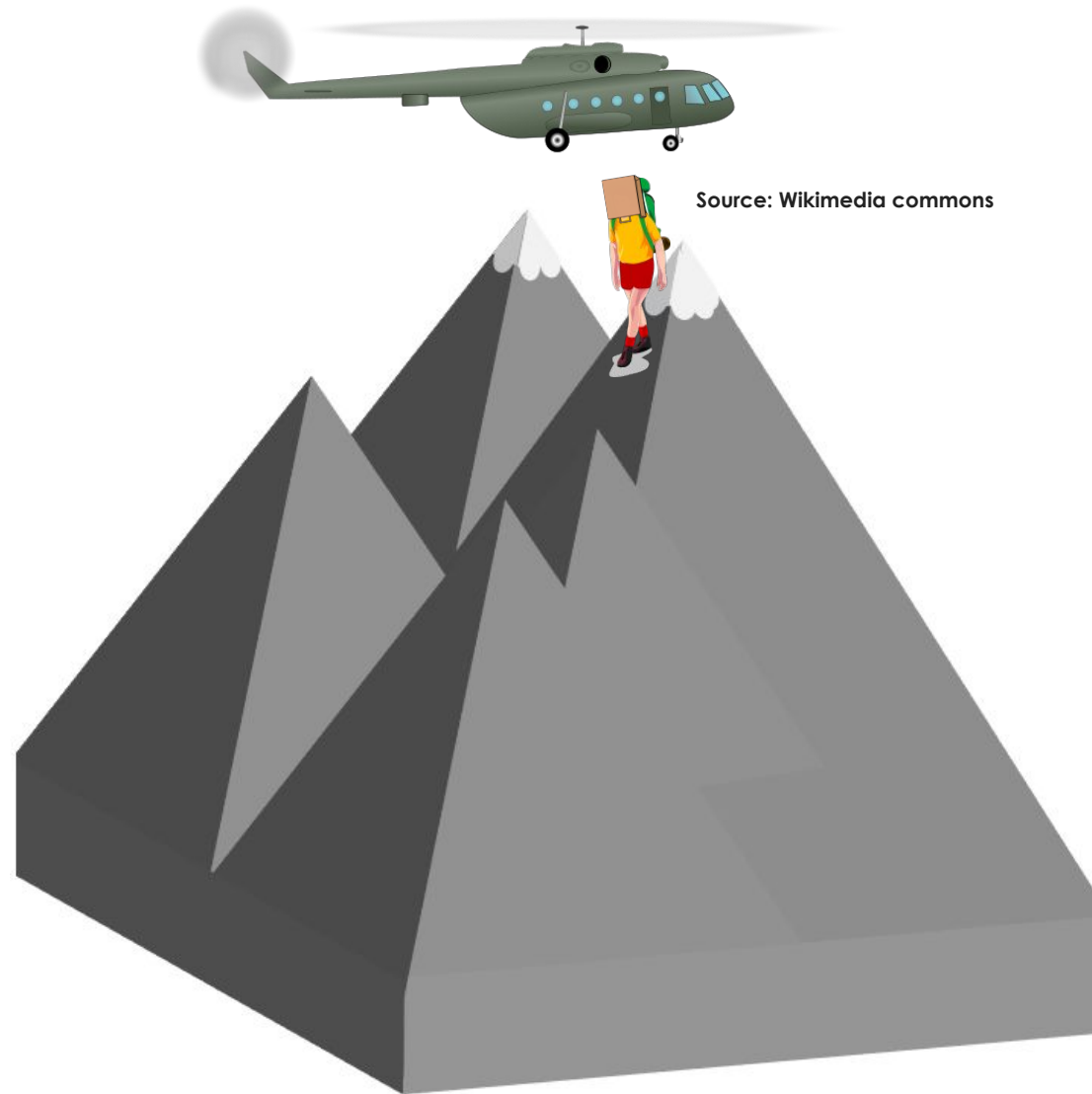




Introduction to Gradient Descent

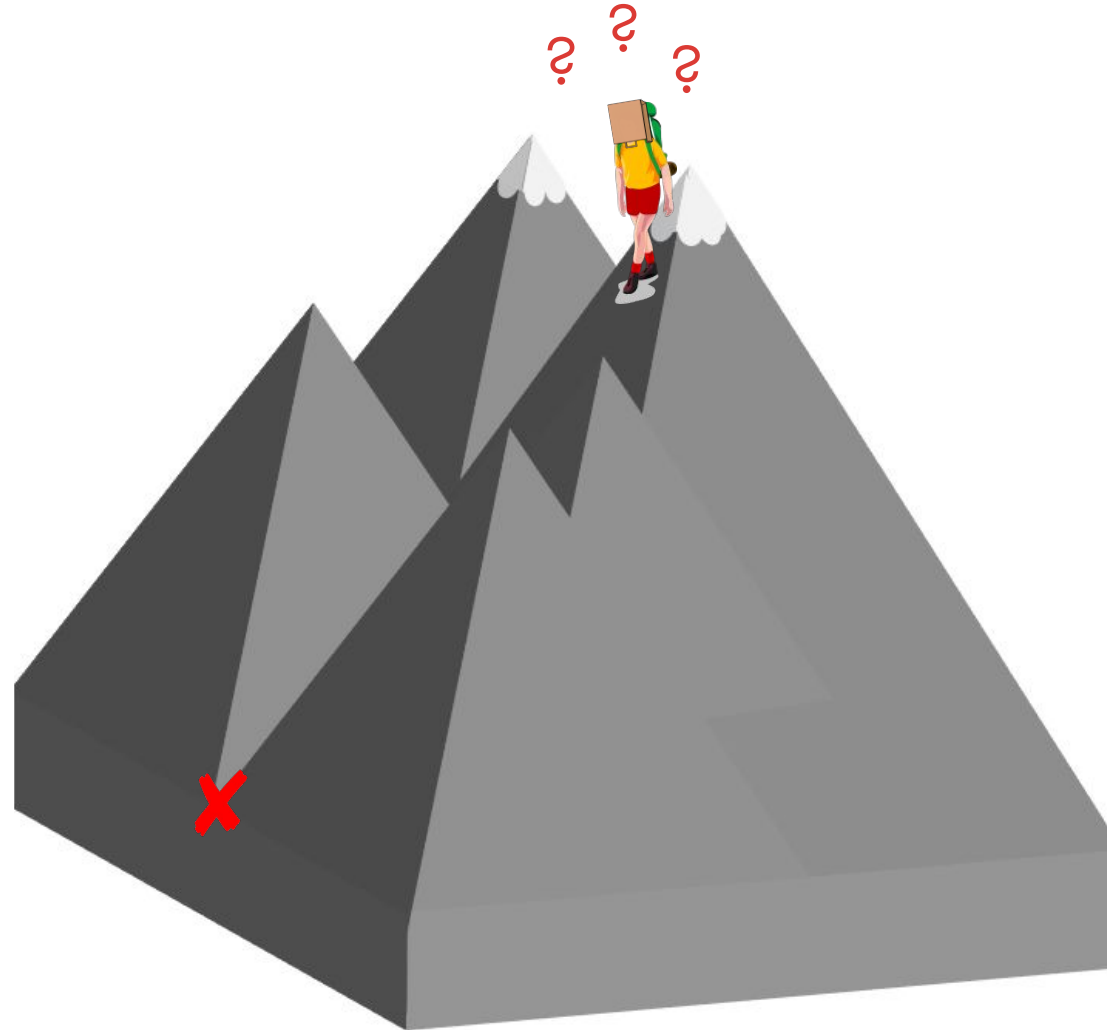
Deep Learning Pre-Work

Introduction

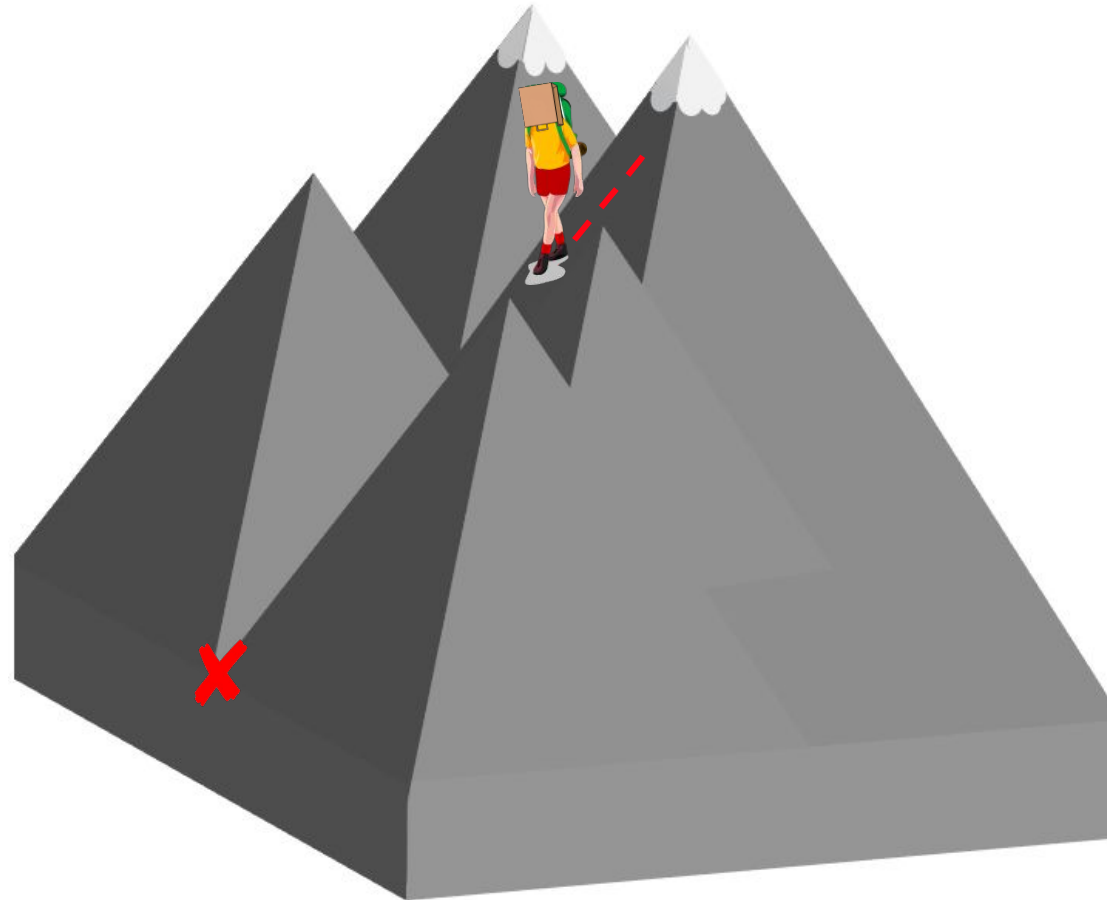


Source: Wikimedia commons

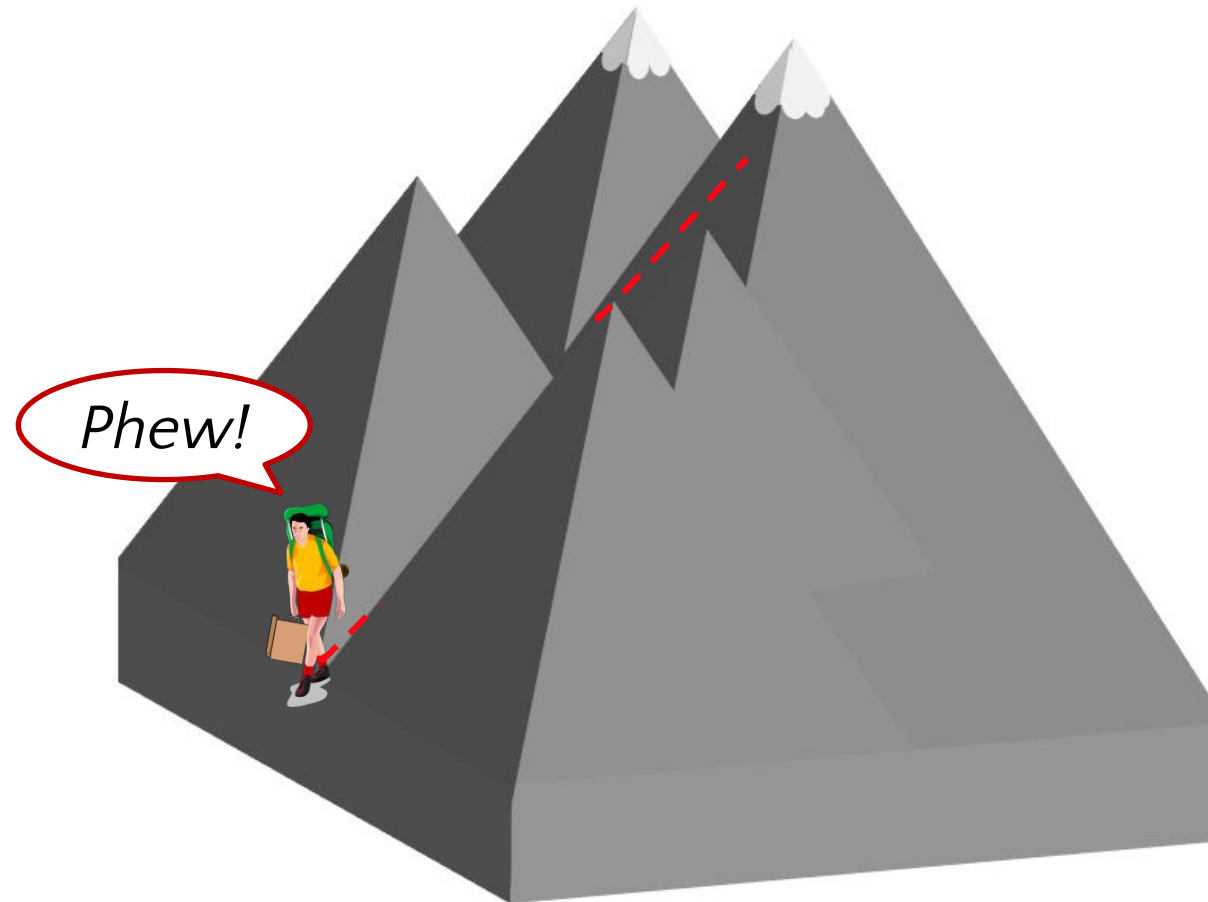
Introduction



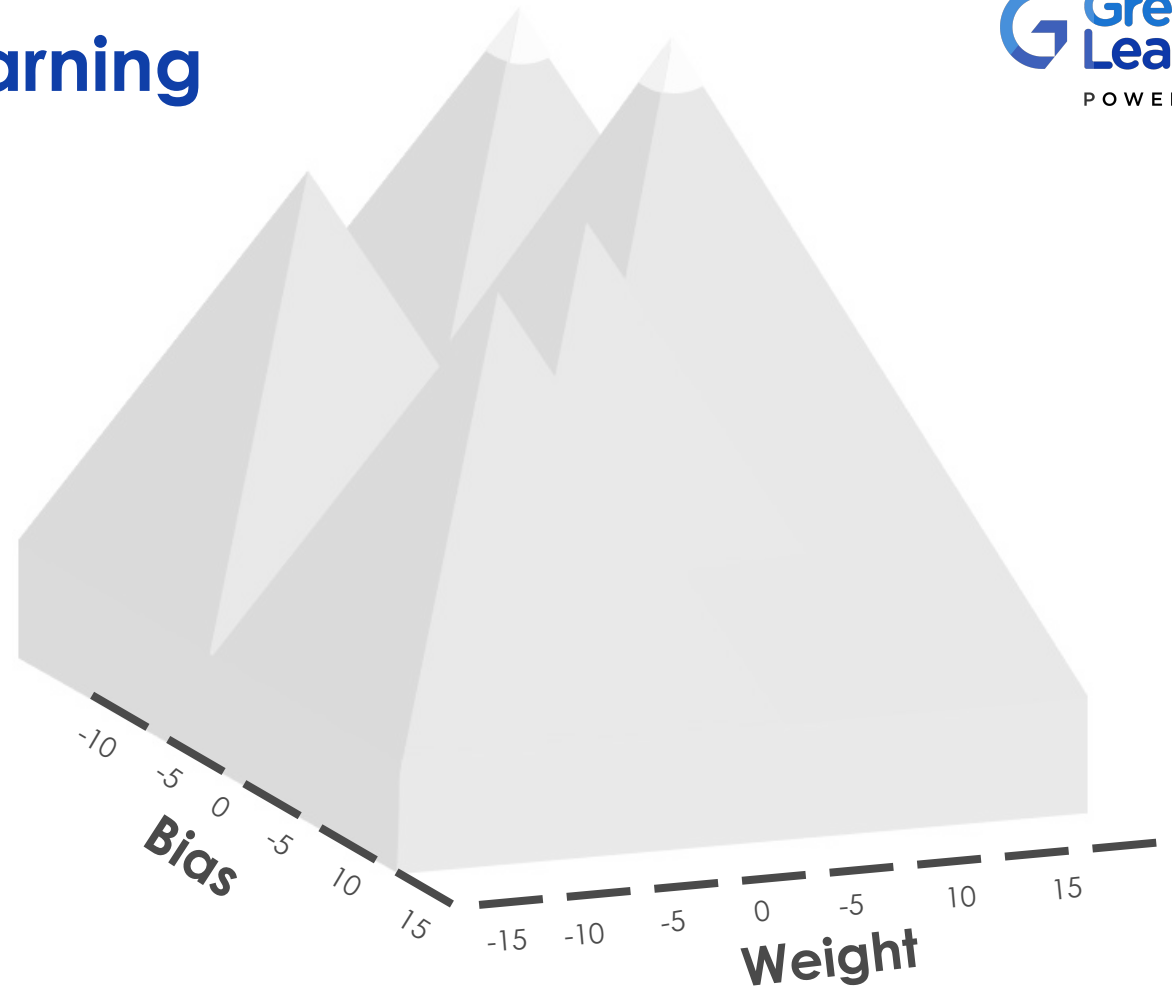
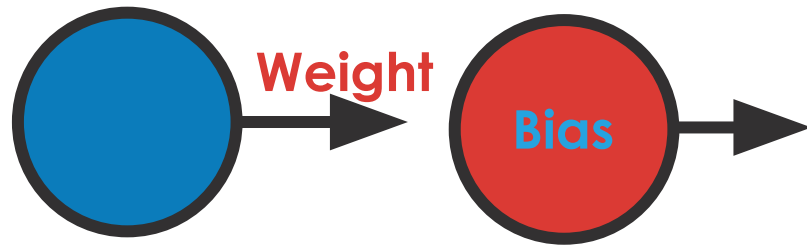
Introduction



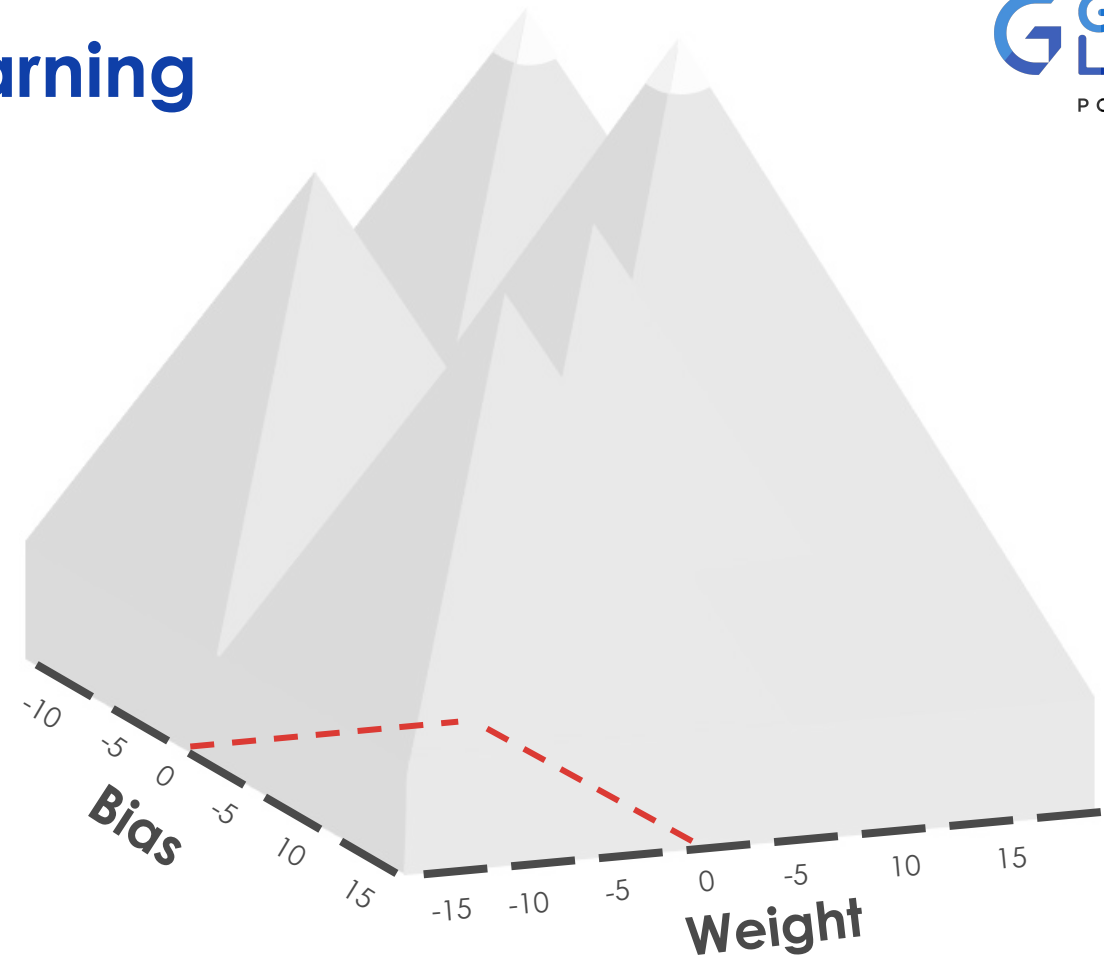
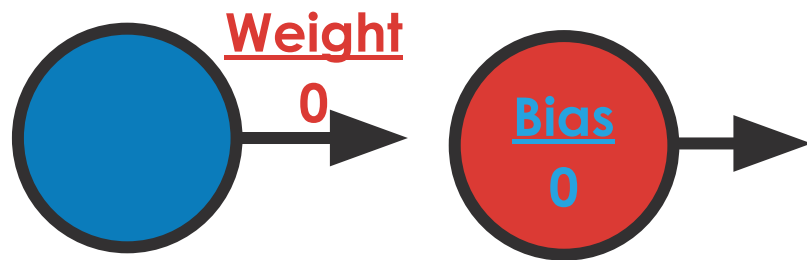
Introduction



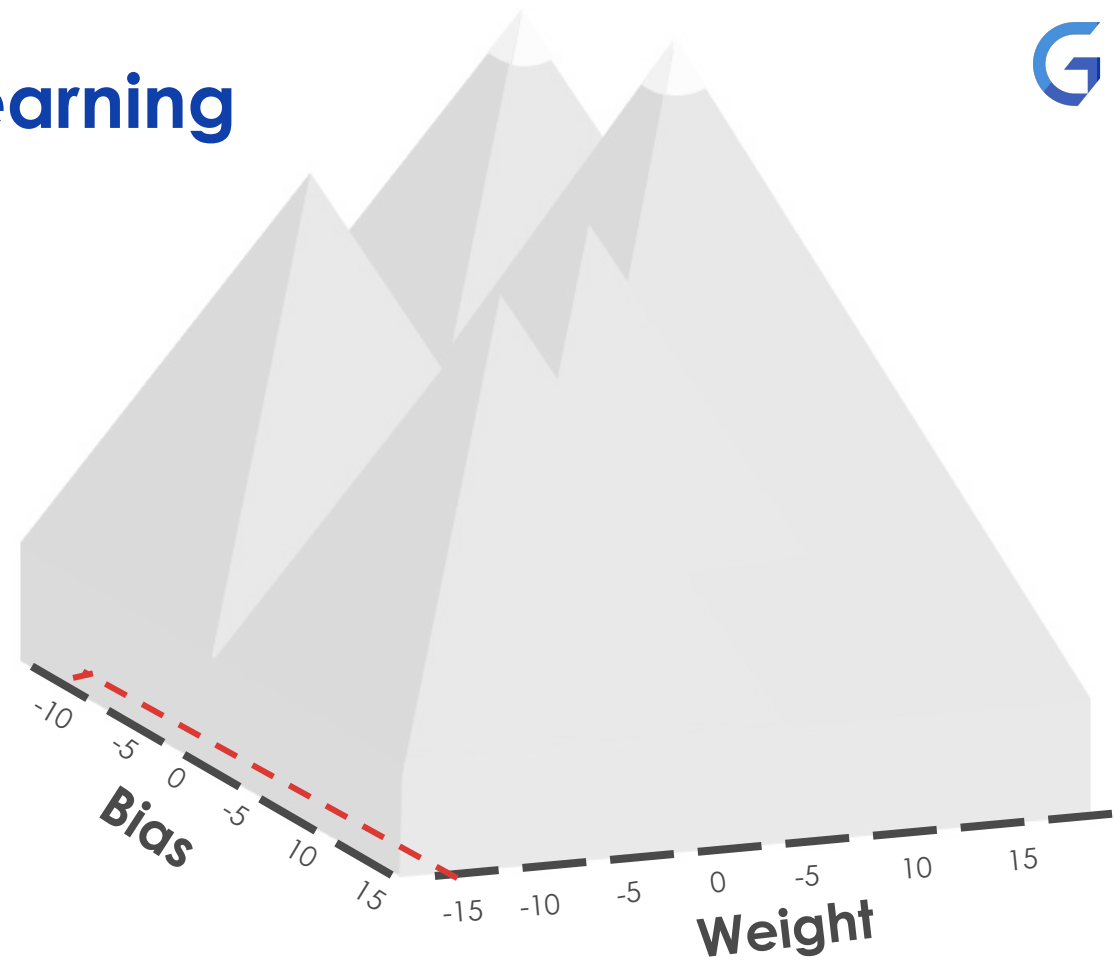
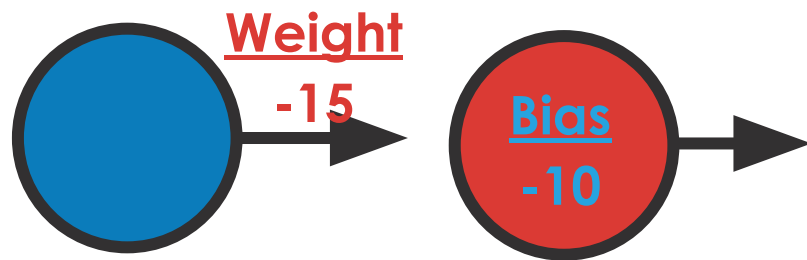
Gradient Descent in Deep Learning



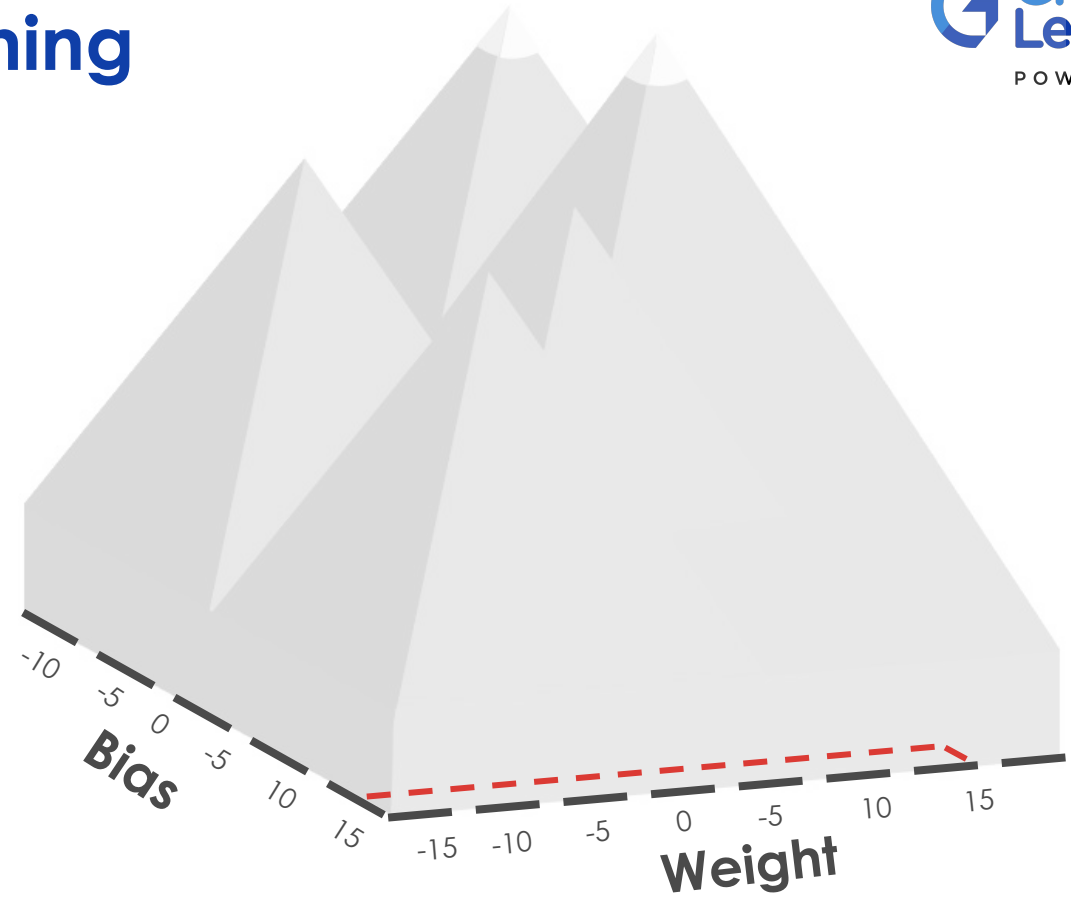
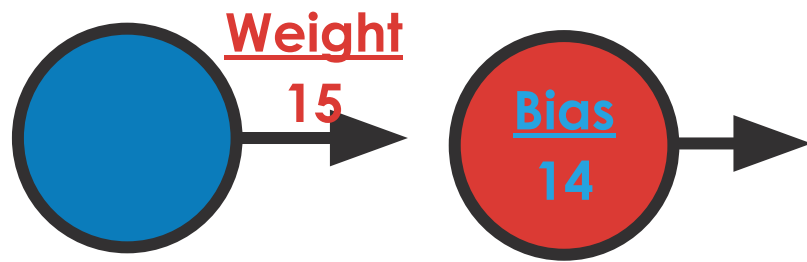
Gradient Descent in Deep Learning



Gradient Descent in Deep Learning

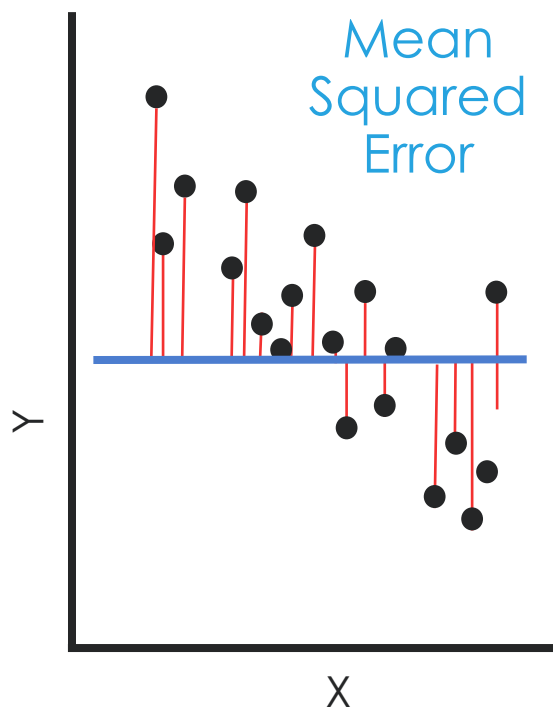


Gradient Descent in Deep Learning



Loss

Regression

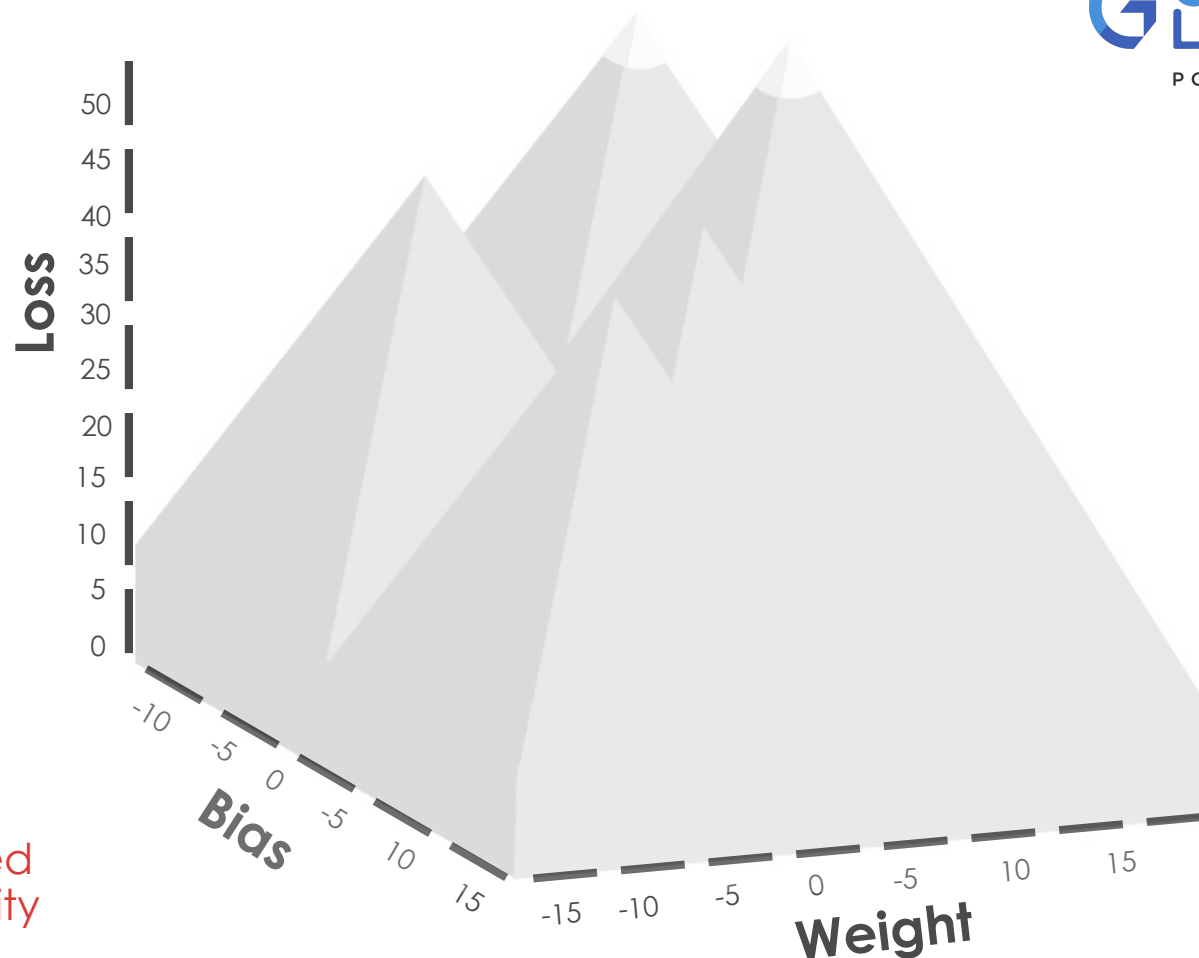


Classification

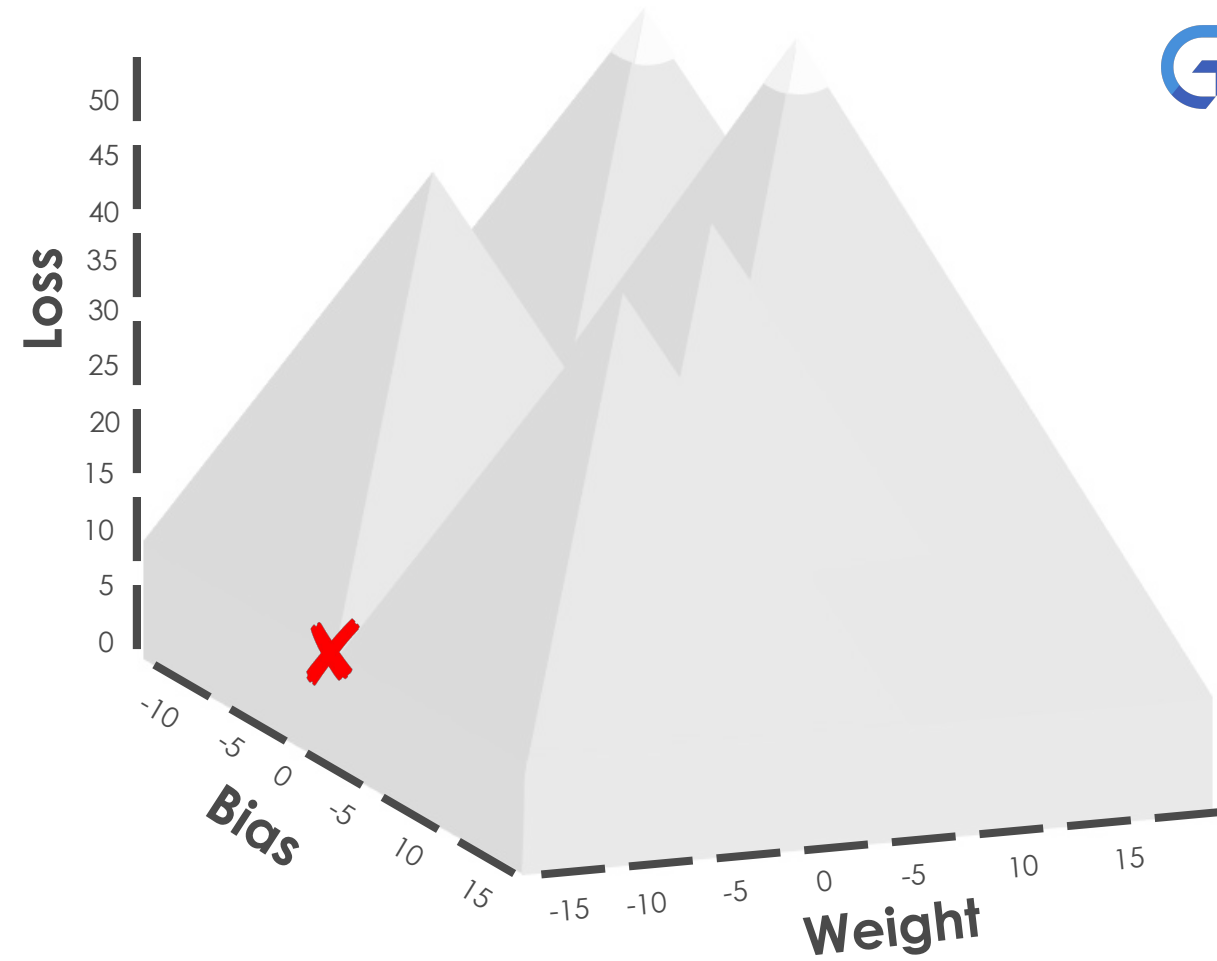
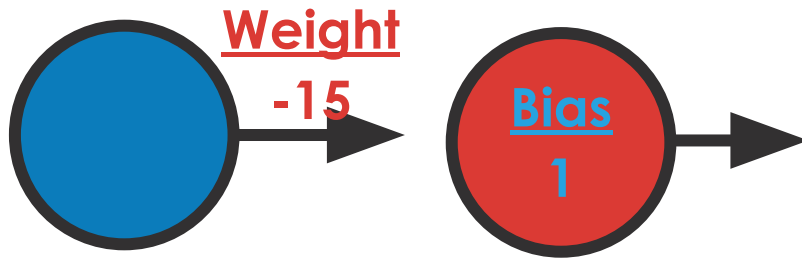
Cross Entropy

$$-\sum_{i=1}^k y_i \log(\hat{y}_i)$$

Actual Predicted Probability

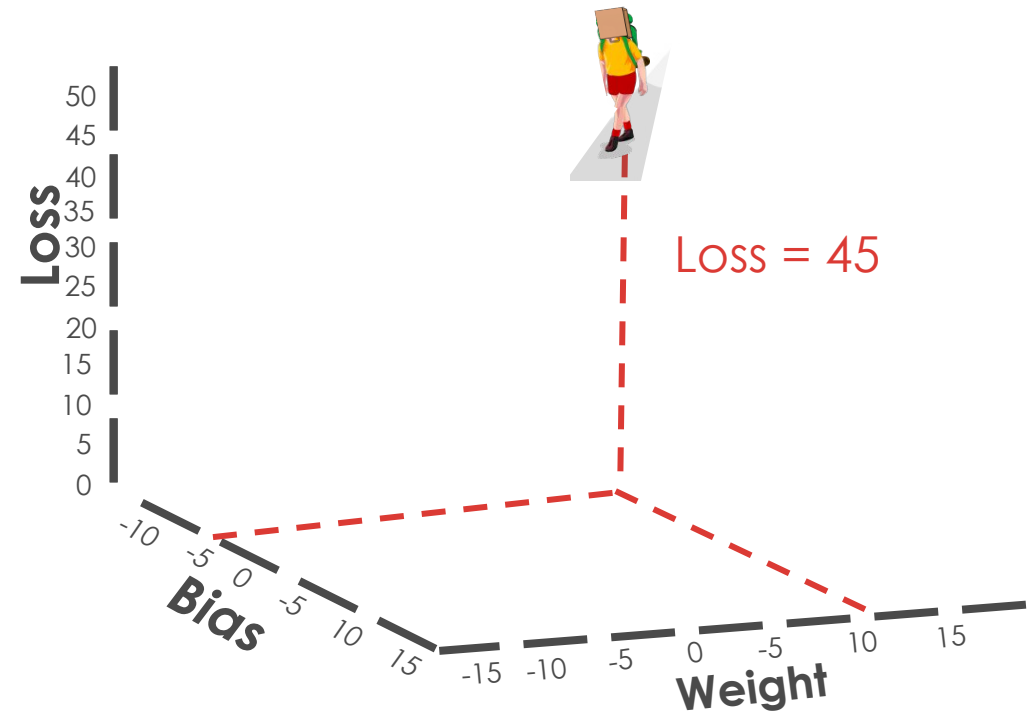
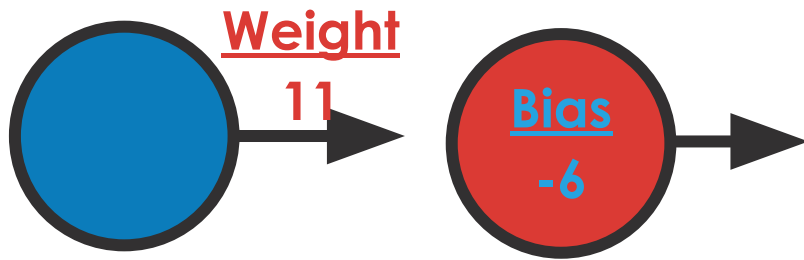


Loss



Gradient Descent Steps

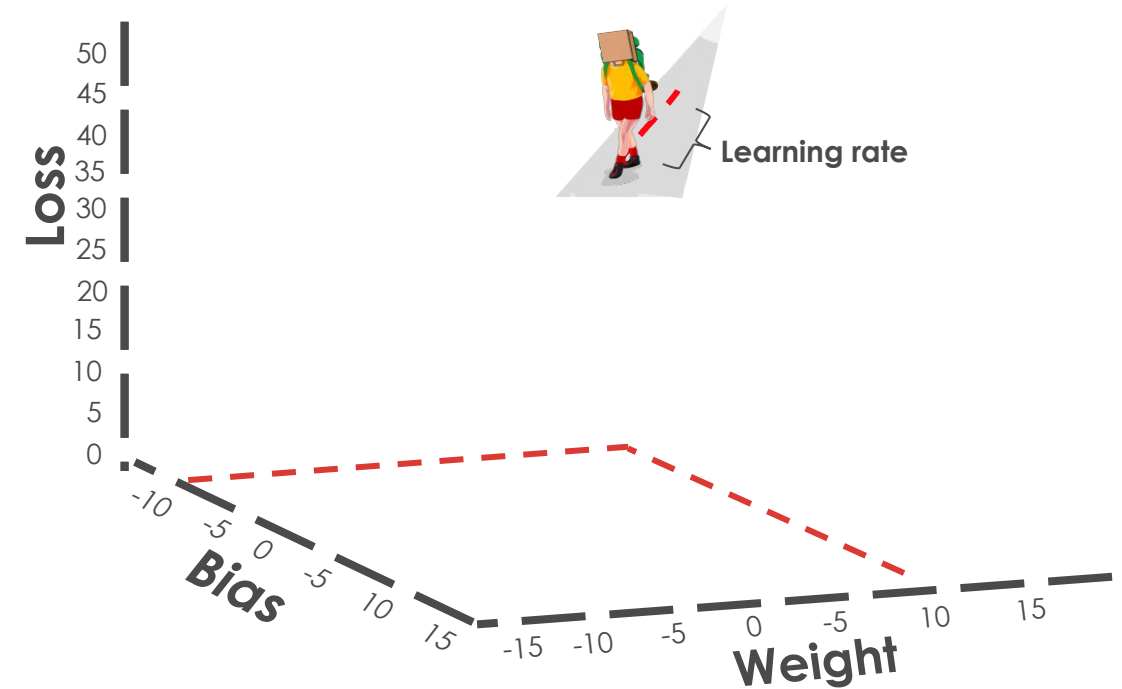
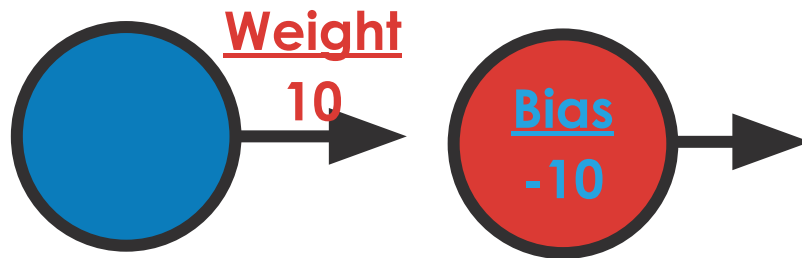
Step 1 Start at a random bias and weight and calculate the loss



Gradient Descent Steps

Step 1 Start at a random bias and weight and calculate the loss

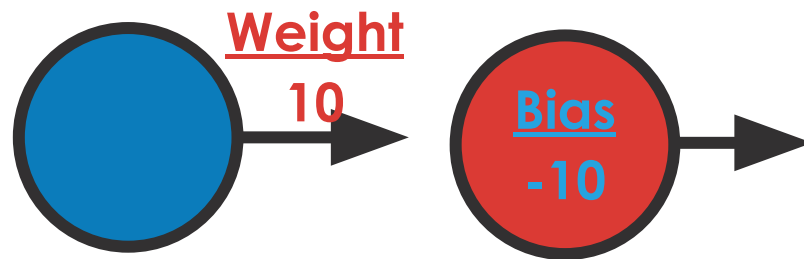
Step 2 Take a step in the direction with the steepest gradient



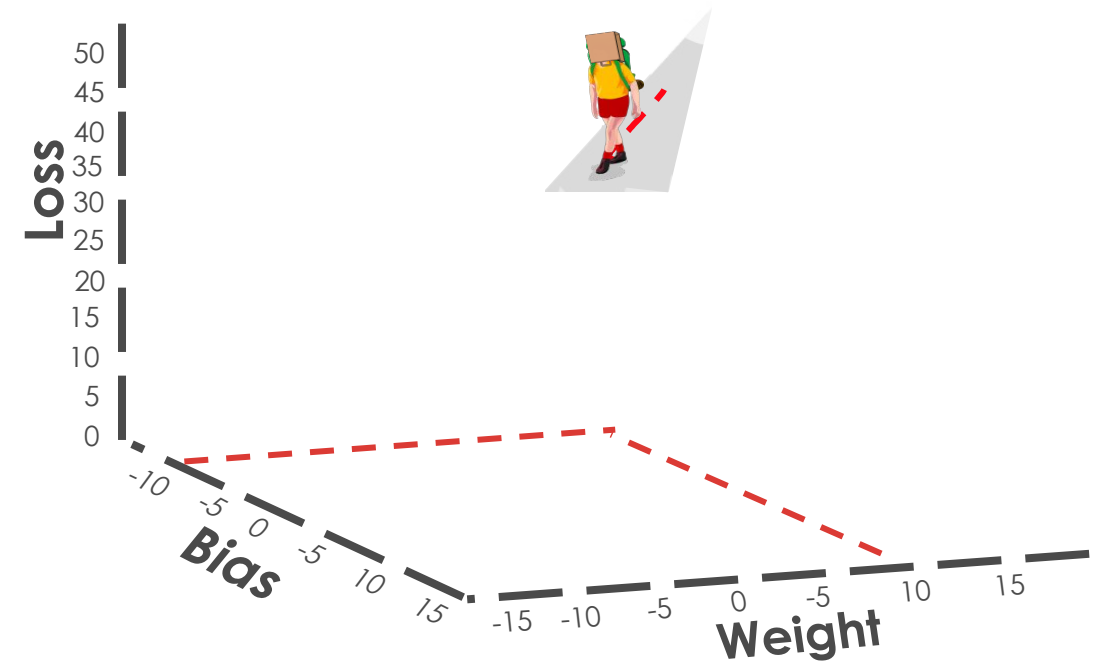
Gradient Descent Steps

Step 1 Start at a random bias and weight and calculate the loss

Step 2 Take a step in the direction with the steepest gradient

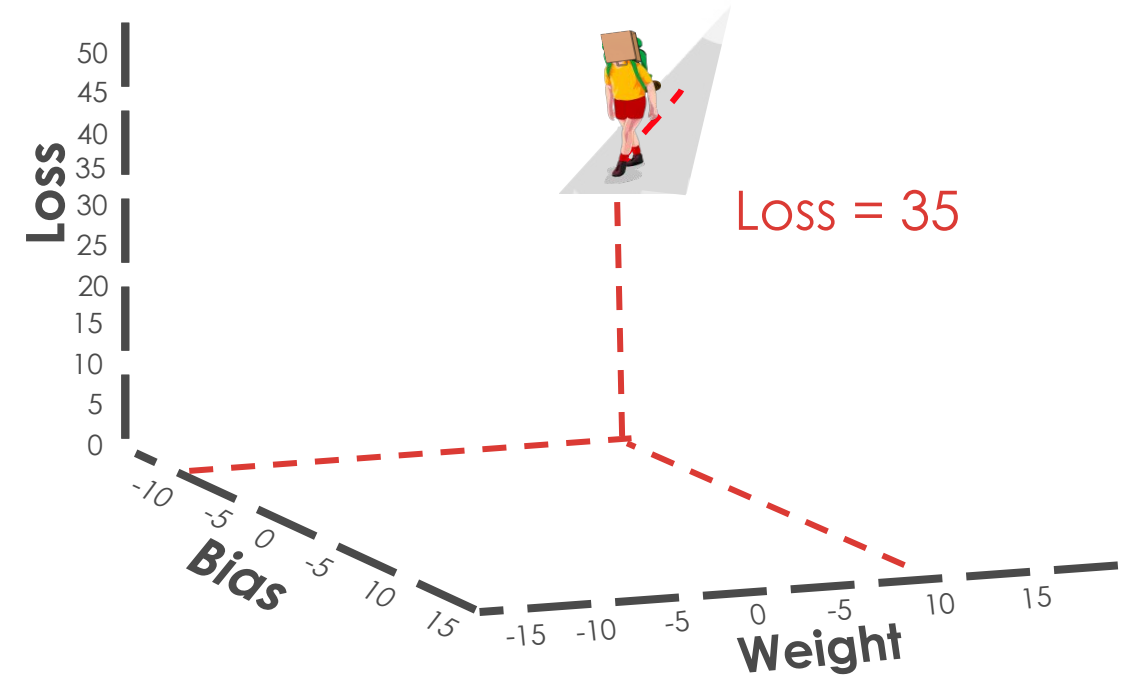
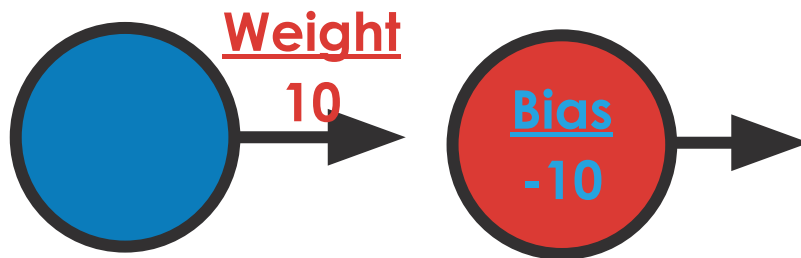


Backpropagation



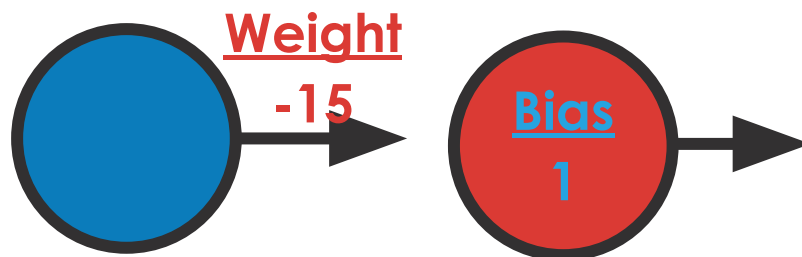
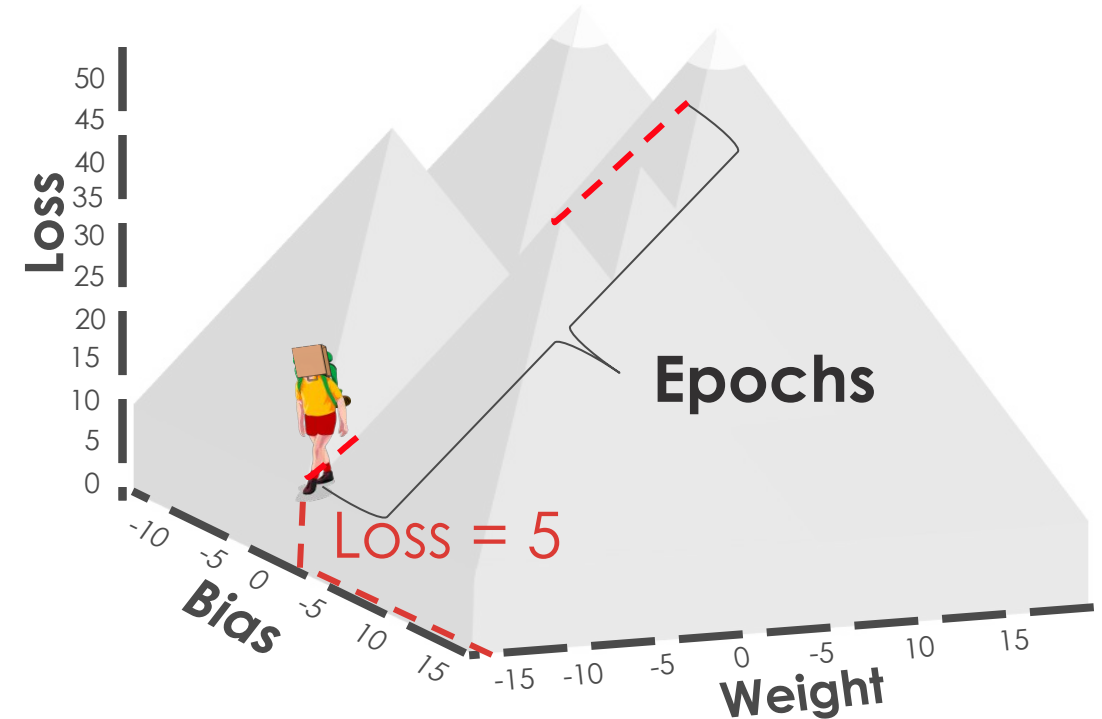
Gradient Descent Steps

- Step 1 Start at a random bias and weight and calculate the loss
- Step 2 Take a step in the direction with the steepest gradient
- Step 3 Calculate the new loss



Gradient Descent Steps

- Step 1 Start at a random bias and weight and calculate the loss
- Step 2 Take a step in the direction with the steepest gradient
- Step 3 Calculate the new loss
- Step 4 Repeat steps 2 and 3



Gradient Descent Steps

- Step 1 Start at a random bias and weight and calculate the loss
- Step 2 Take a step in the direction with the steepest gradient
- Step 3 Calculate the new loss
- Step 4 Repeat steps 2 and 3**

