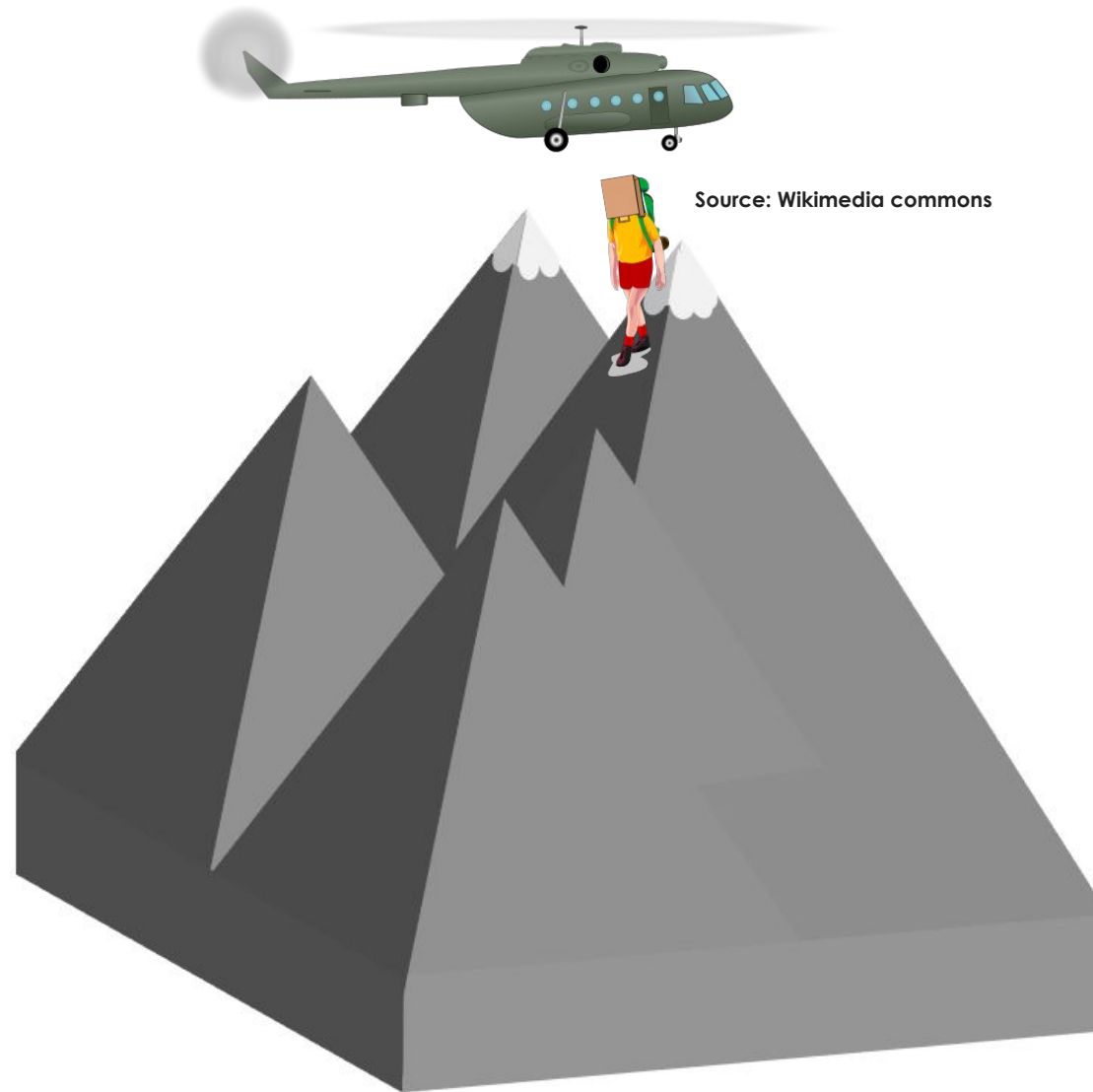




Introduction to Gradient Descent

Deep Learning Pre-Work

Introduction

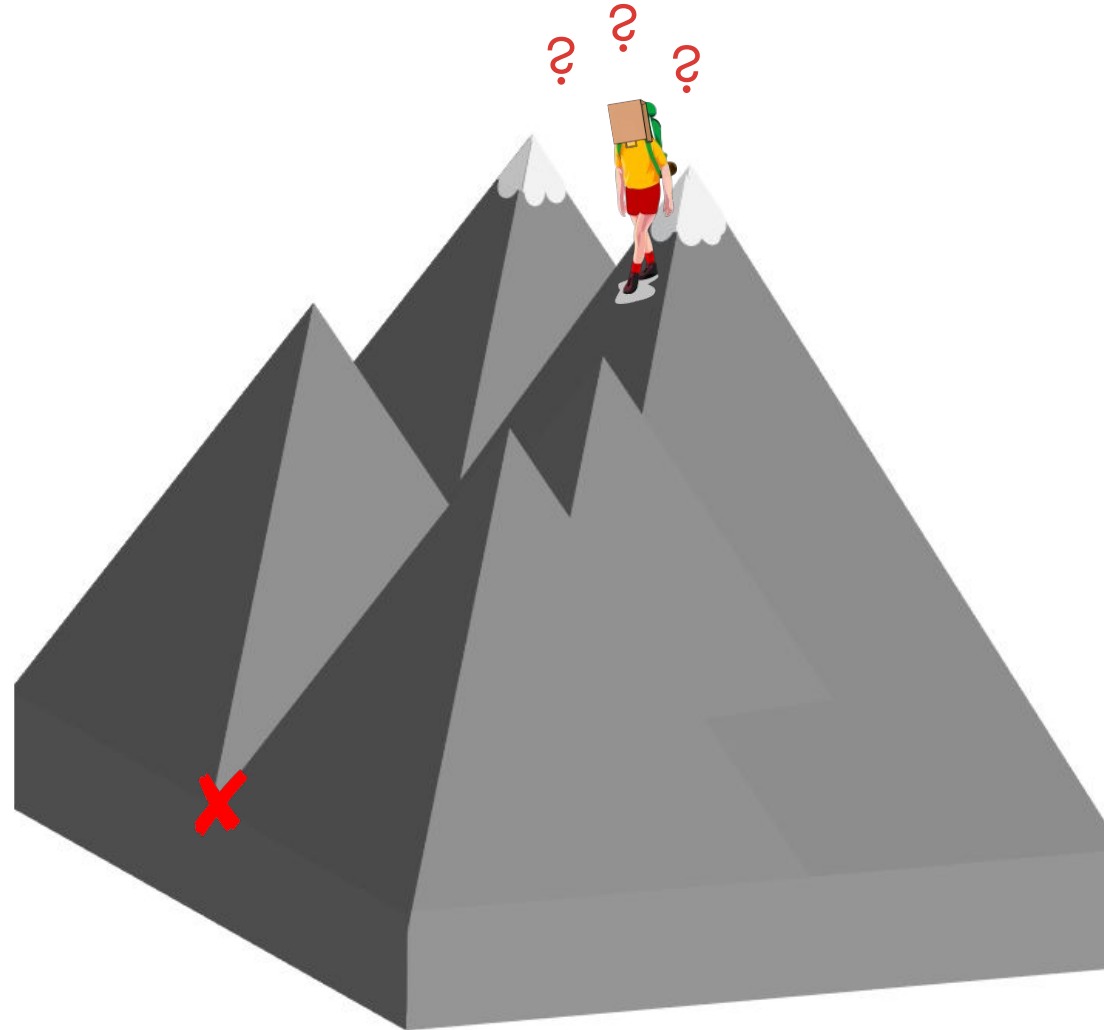


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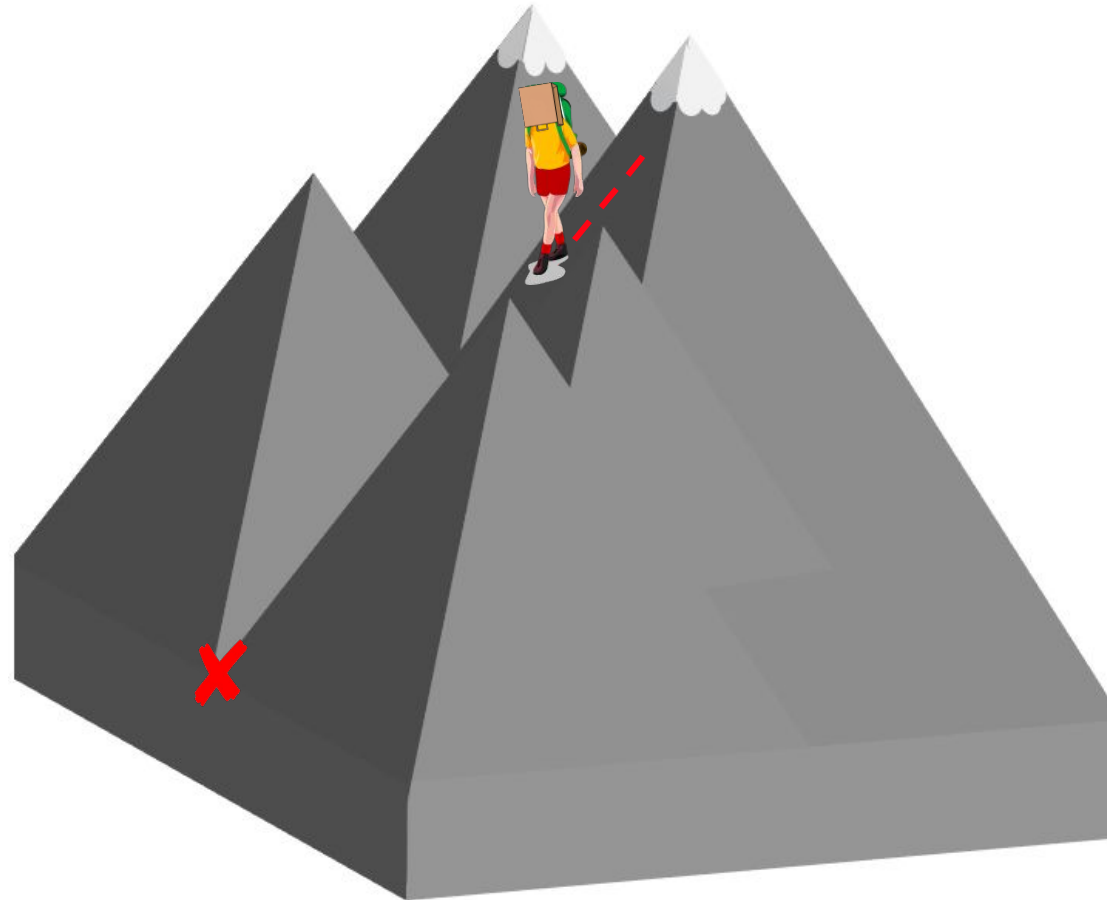
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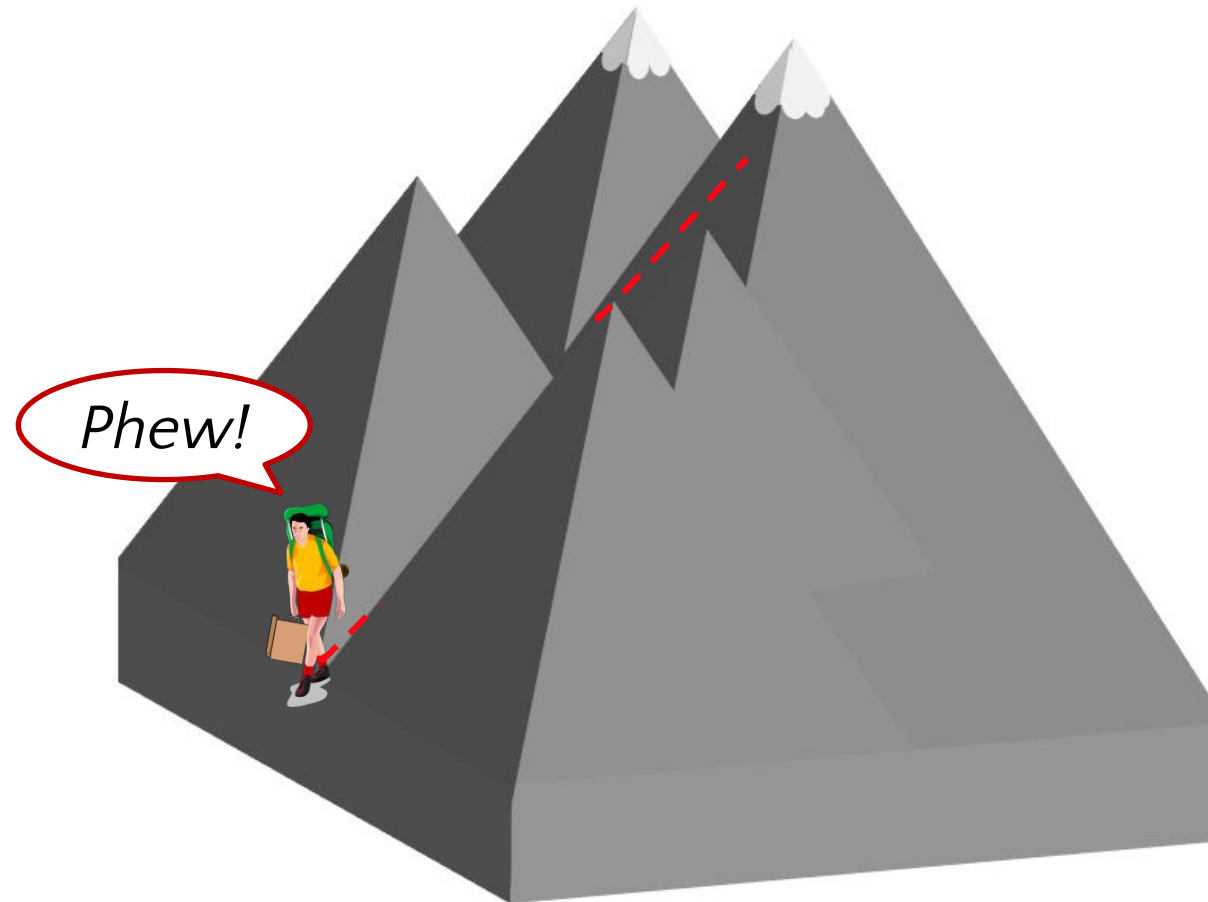
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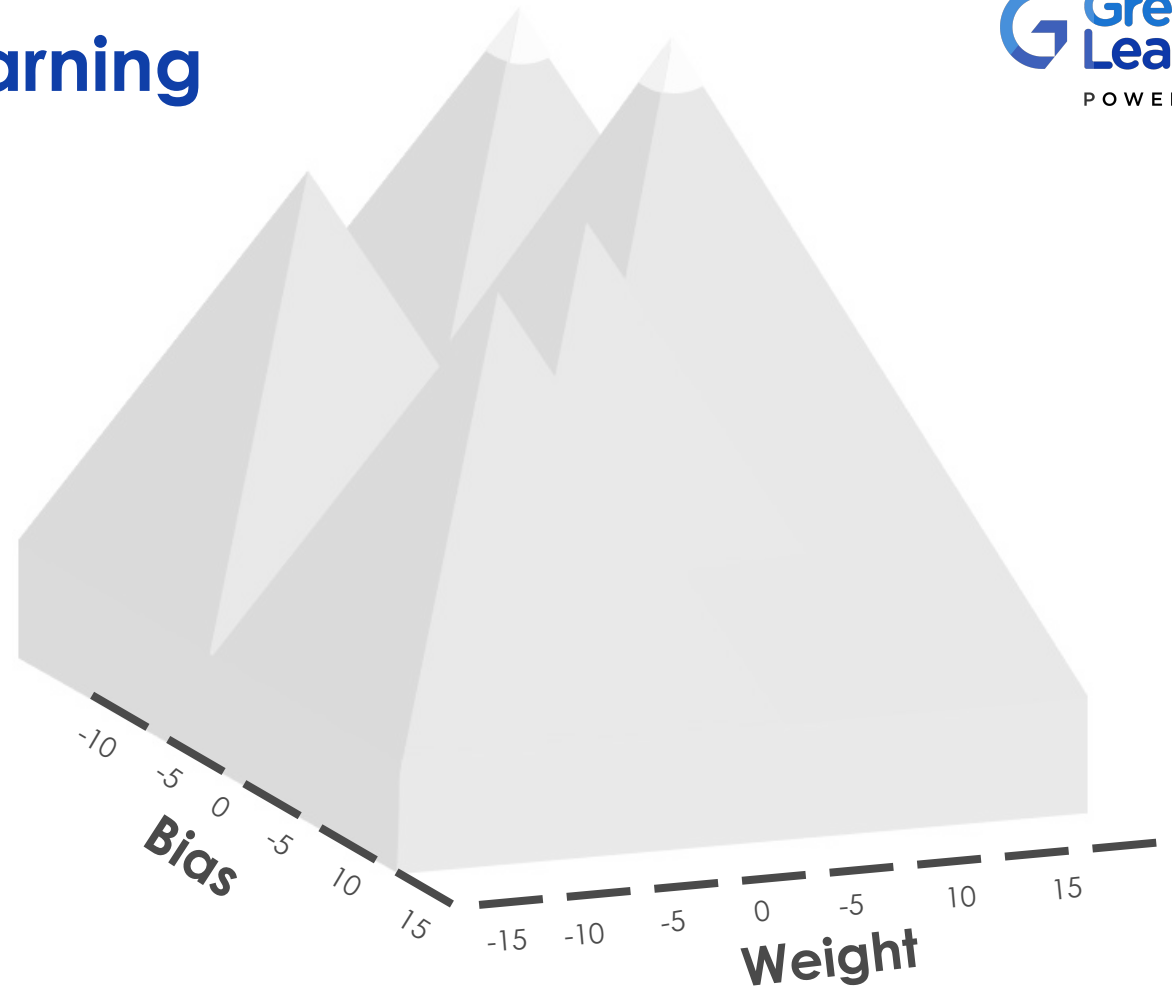
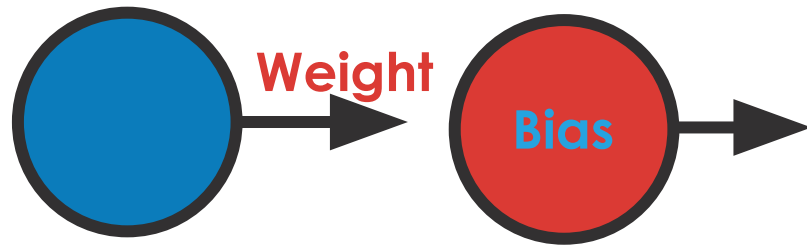
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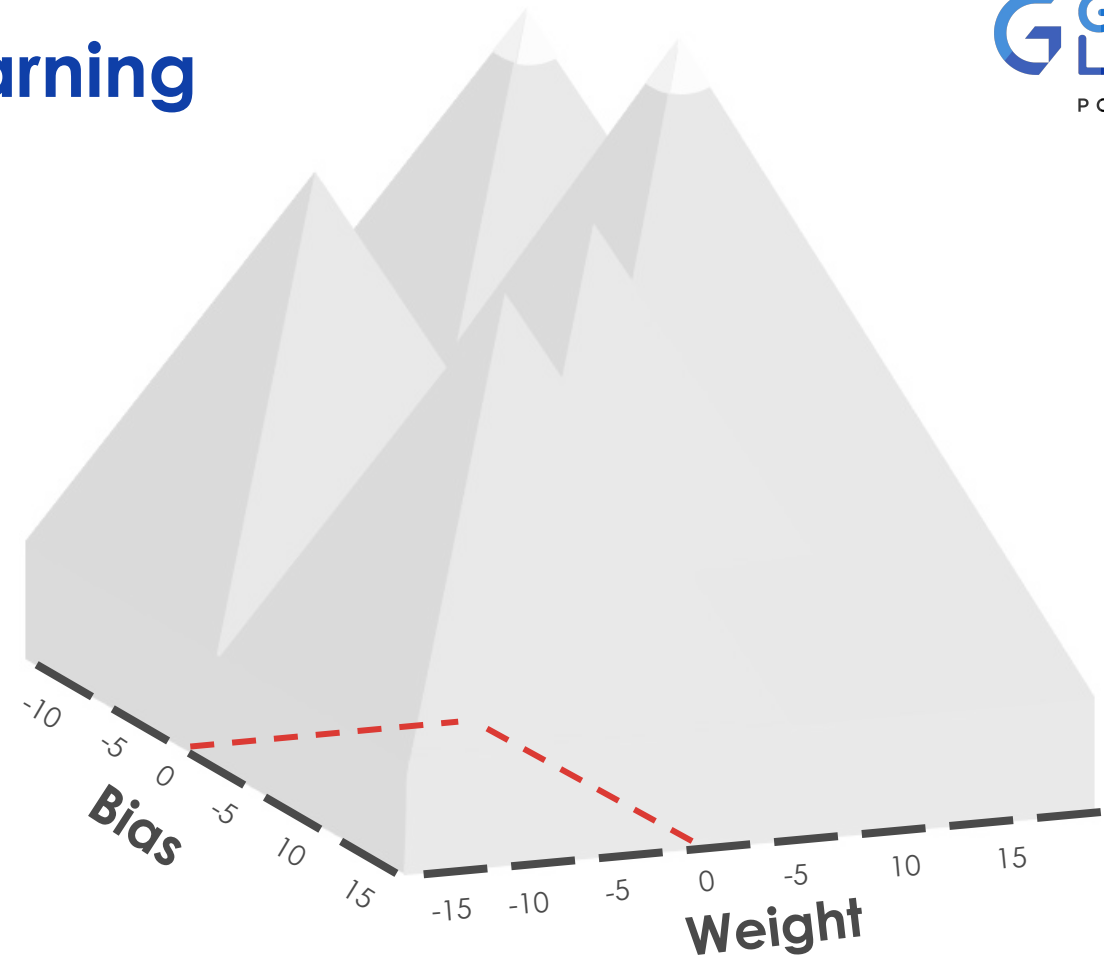
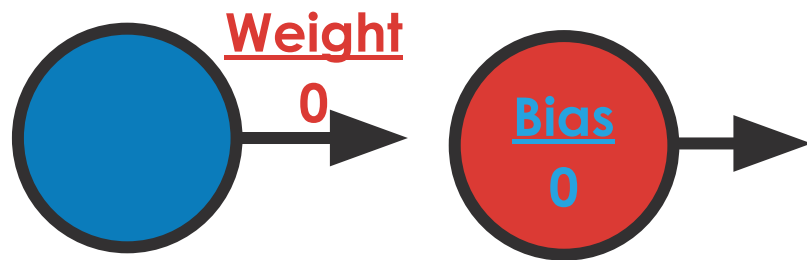
Gradient Descent in Deep Learning



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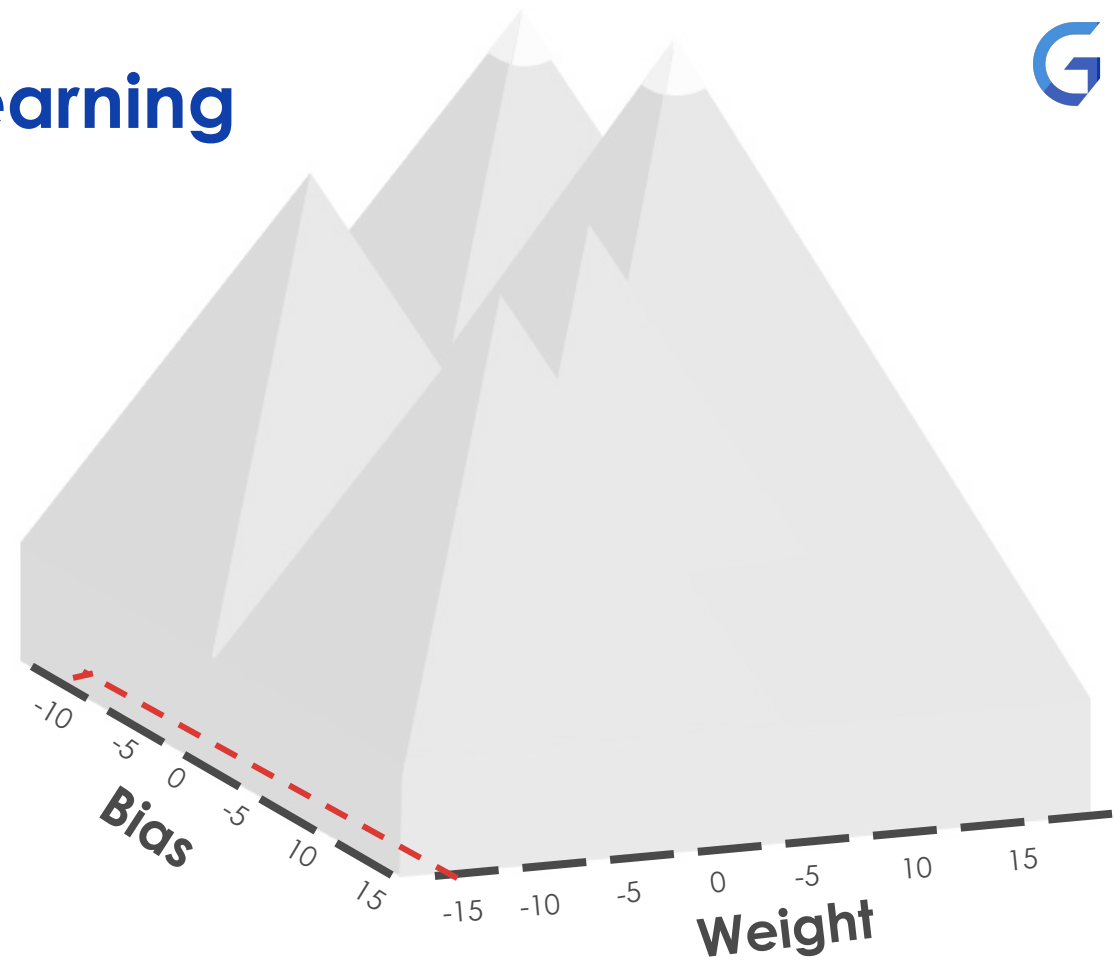
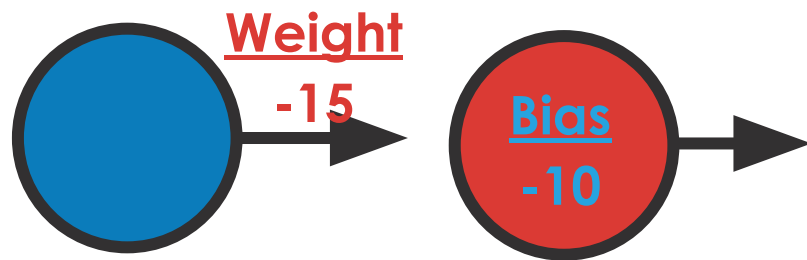
Gradient Descent in Deep Learning



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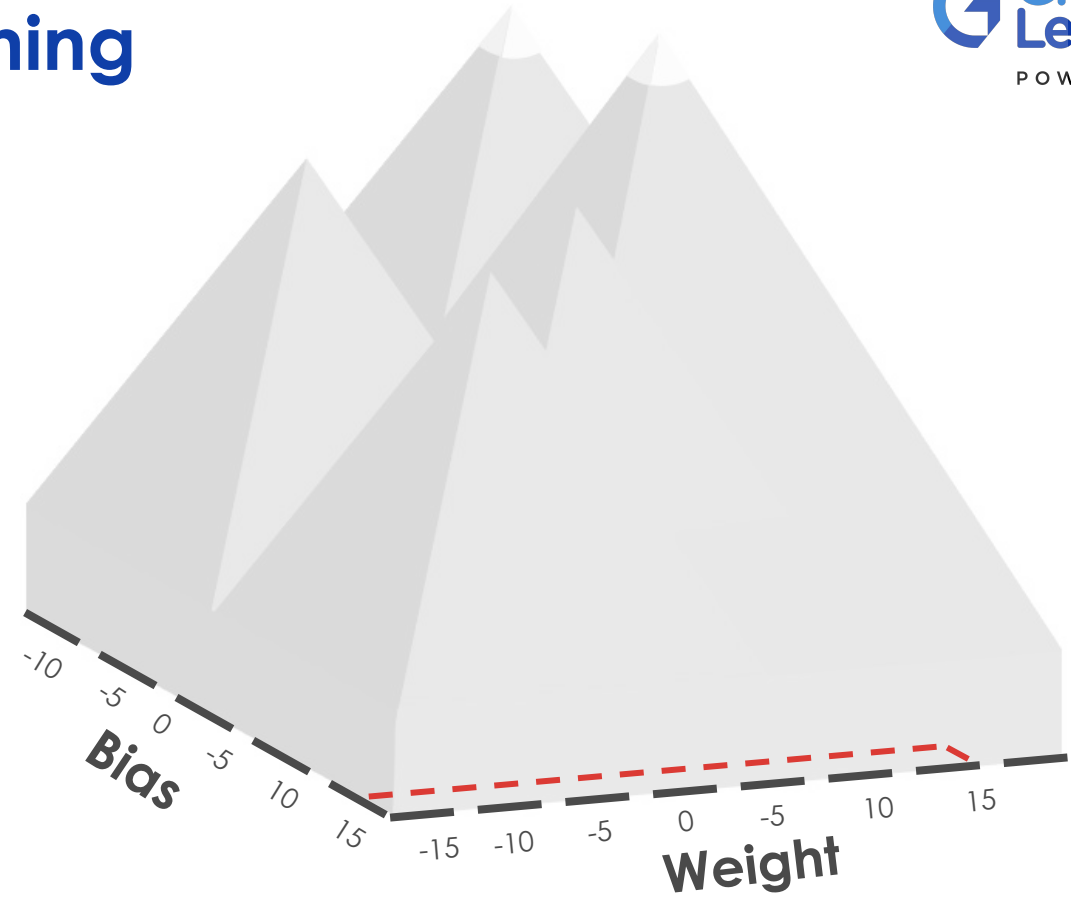
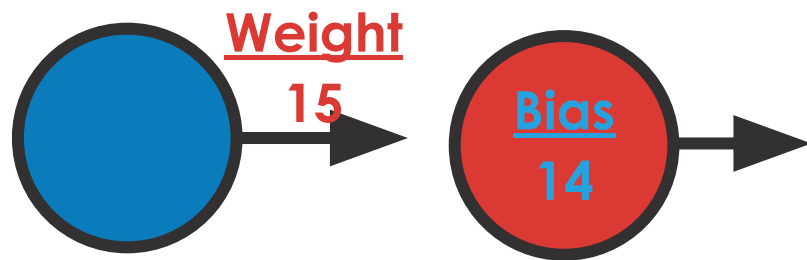
Gradient Descent in Deep Learning



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Gradient Descent in Deep Learning

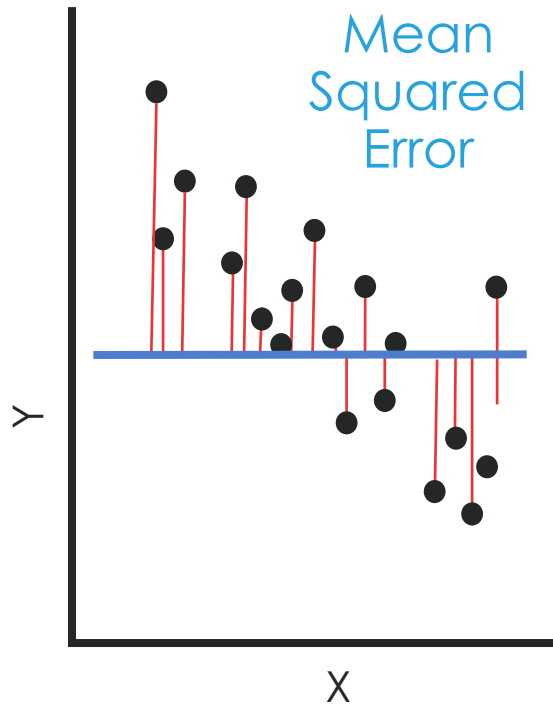


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Loss

Regression

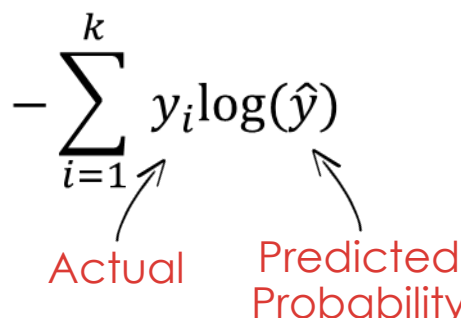


Classification

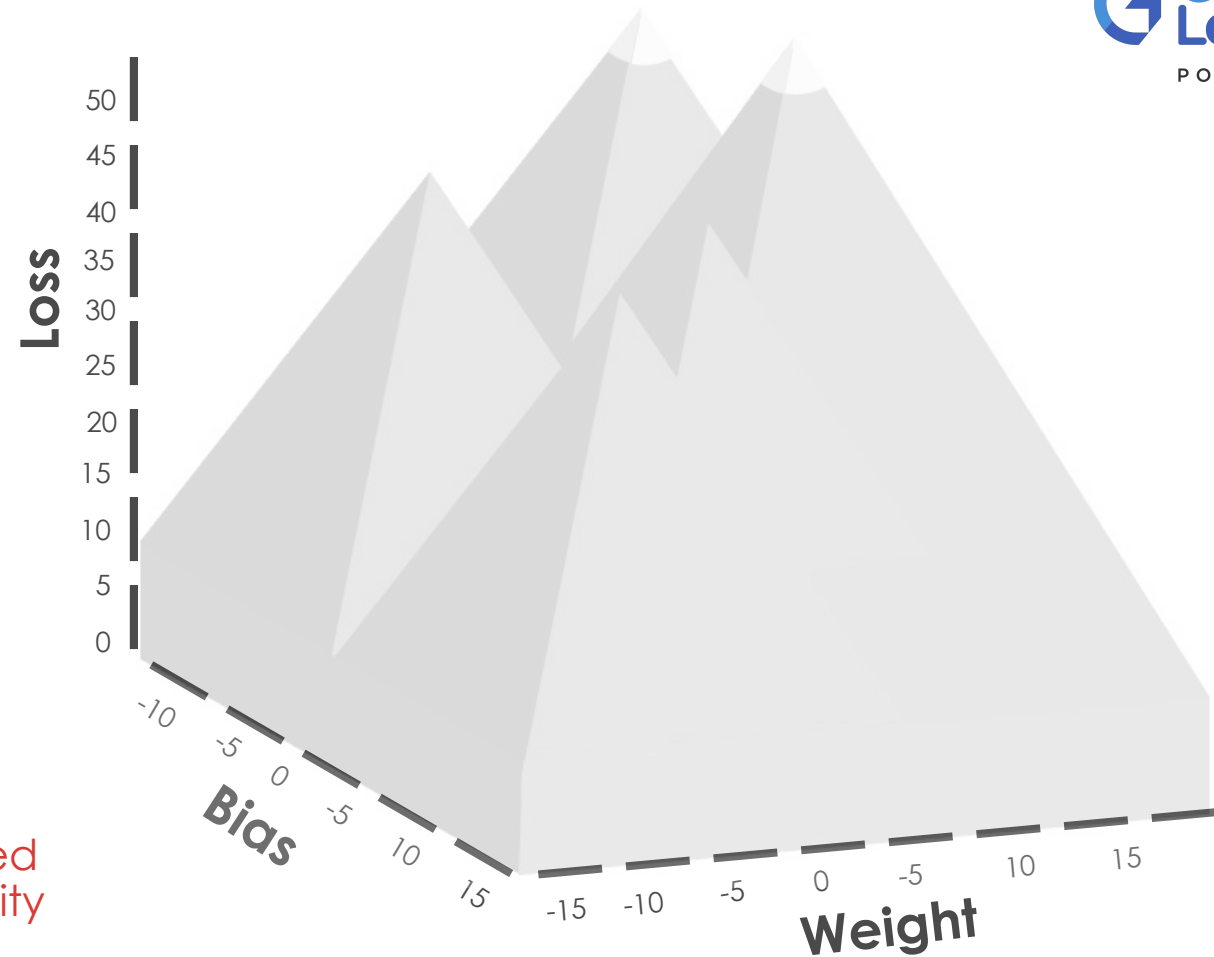
Cross Entropy

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

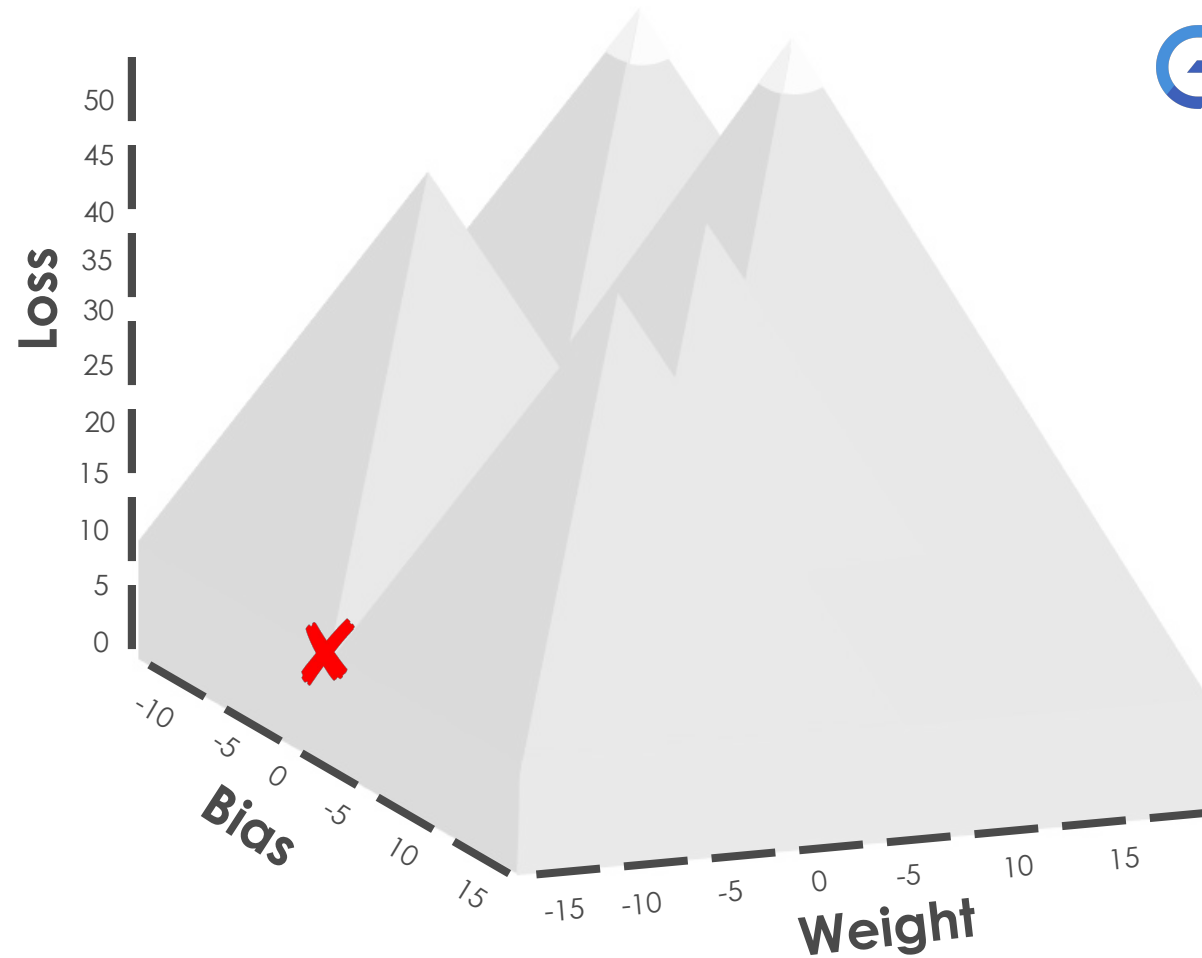
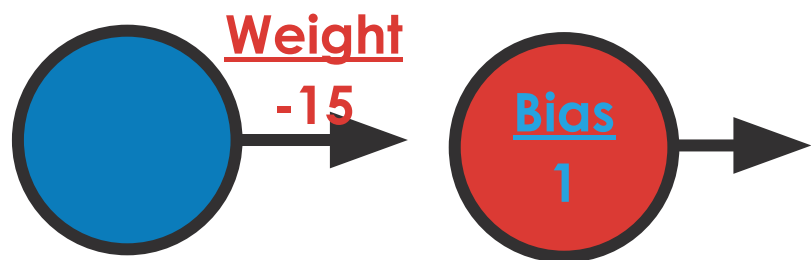
Actual Predicted Probability



The diagram shows the cross entropy formula with arrows pointing from the labels 'Actual' and 'Predicted Probability' to the terms y_i and \hat{y}_i respectively in the formula.



Loss

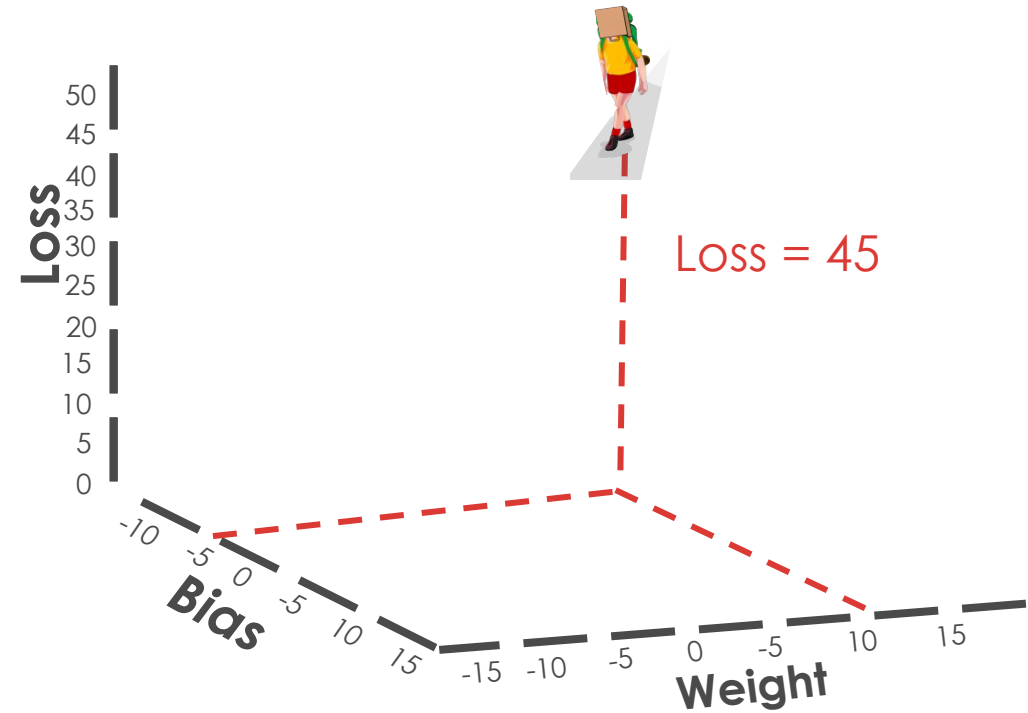
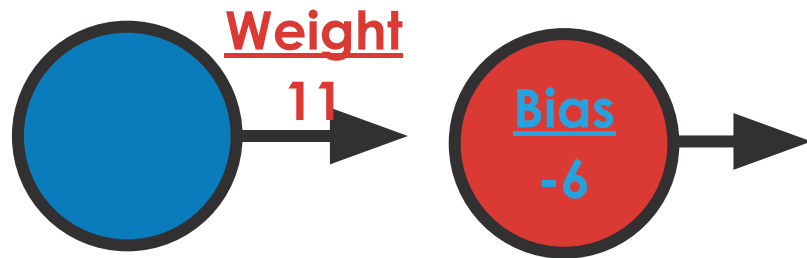


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Gradient Descent Steps

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



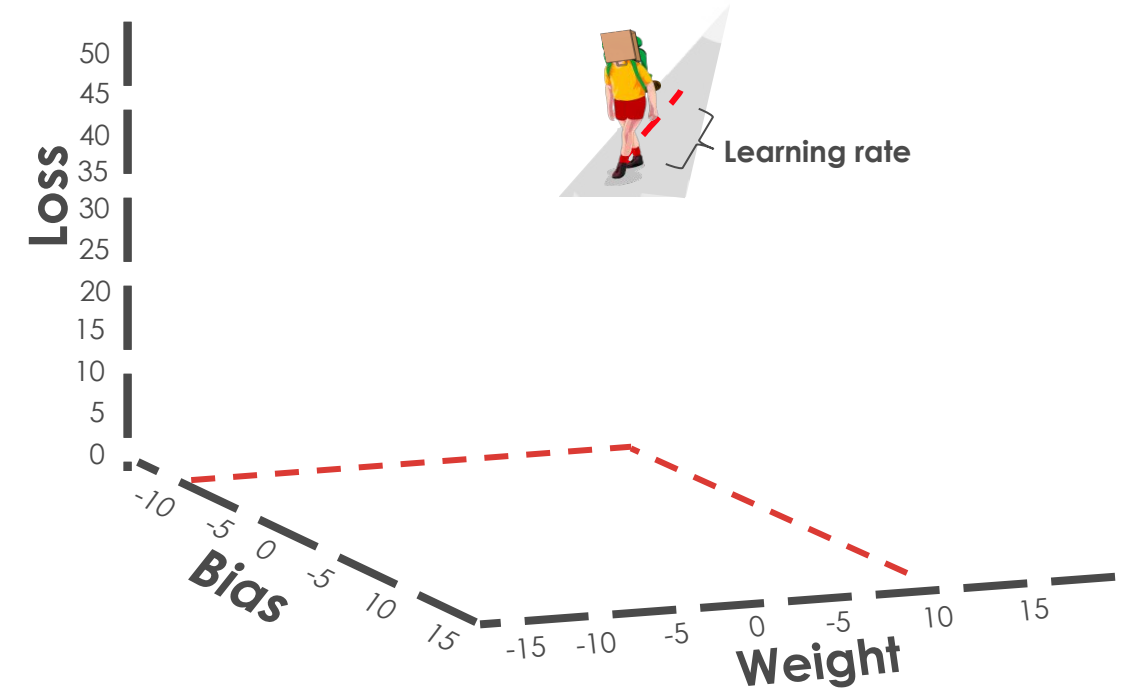
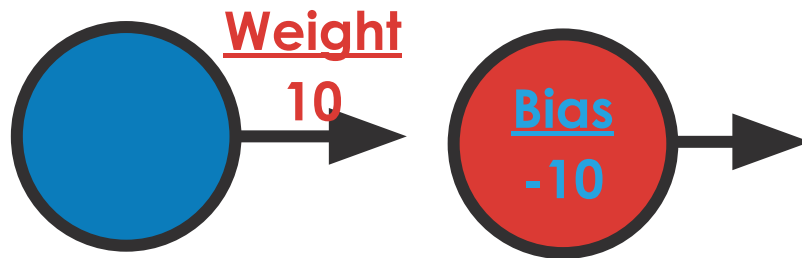
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Gradient Descent Steps

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

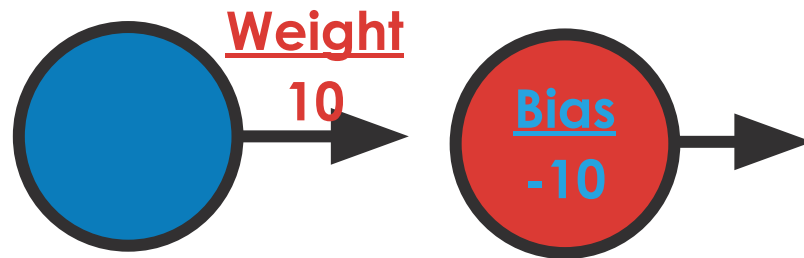
Step 2 Take a step in the direction with the steepest gradient



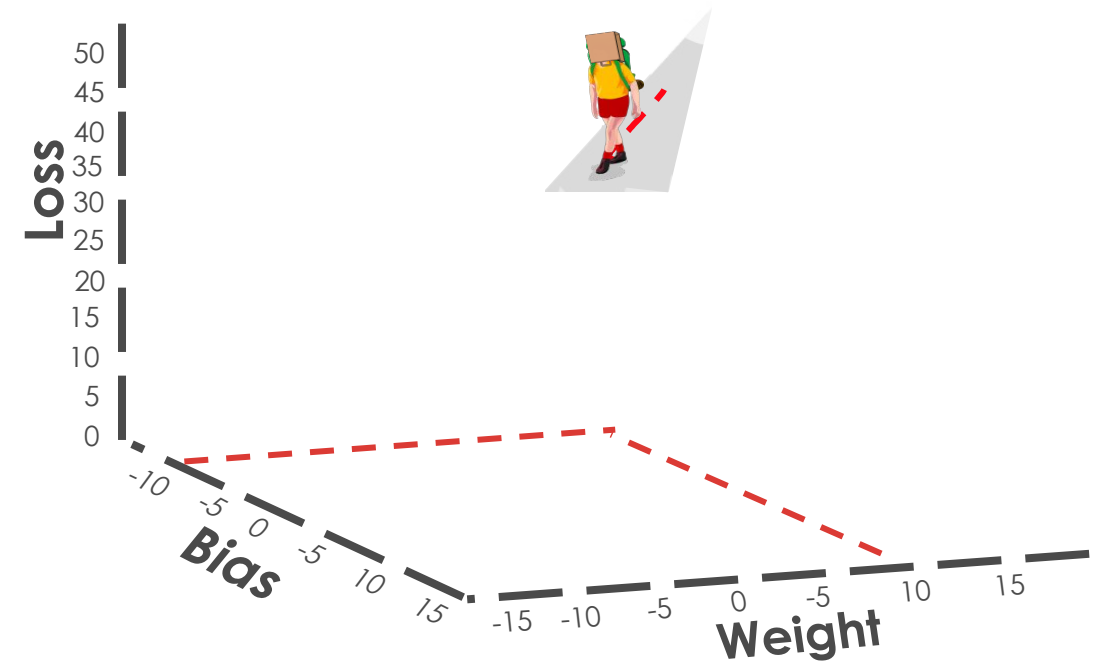
Gradient Descent Steps

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

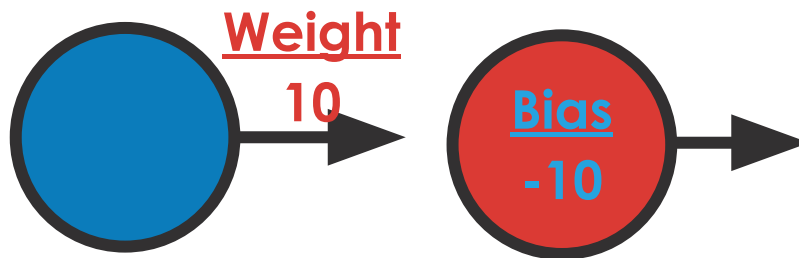
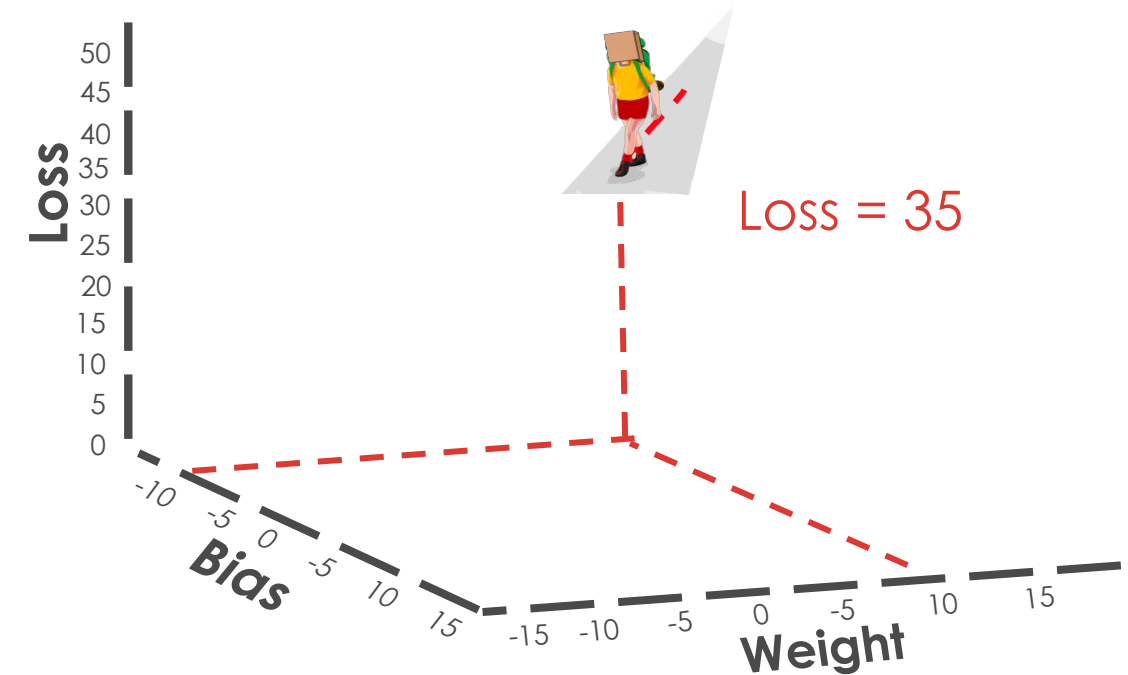


Backpropagation



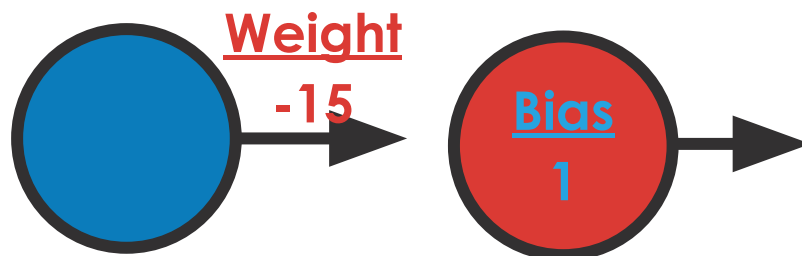
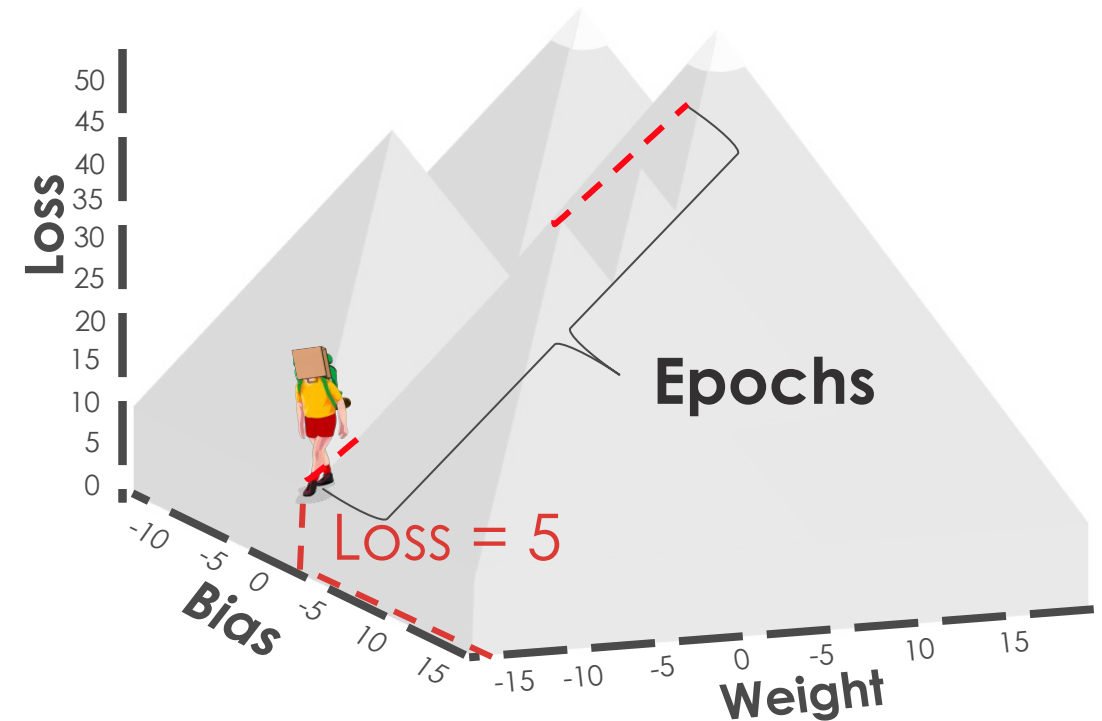
Gradient Descent Steps

- 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

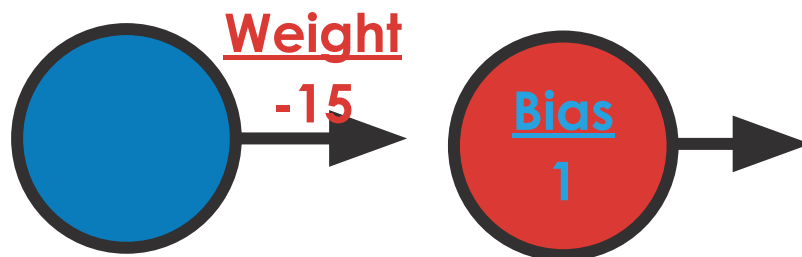
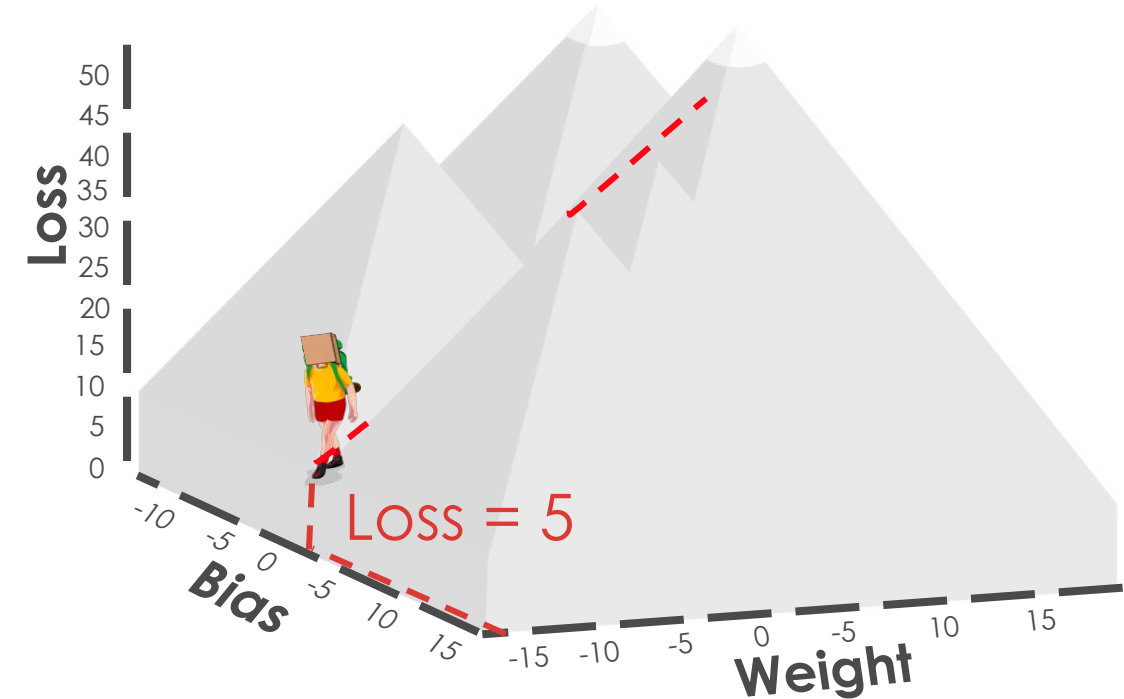


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Gradient Descent Steps

- 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**



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