



✓ **Congratulations! You passed!**

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1. Which of these is a common way that neural network training can fail?



Gradients can vanish, making it harder to train networks the deeper they are

Correct



Classification networks can yield outputs greater than 1.0

Un-selected is correct



Gradients can explode if the learning rate is too high

Correct



Entire layers can die with all their weights becoming zero

Correct



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2. If you see a dead layer (fraction of zero weights close to 1), what is a reasonable thing to try?



Increase the learning rate



Lower the learning rate

Correct



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3. I am training a classification neural network with 5 hidden layers, sigmoid activation function, and [128, 64, 32, 16, 8] with learning_rate=0.05 and batch_size=32. I notice from TensorBoard that gradients in the third layer are near-zero. Is this a problem?



Yes

Correct

If the gradients are near-zero, then gradient descent will not be able to optimize the weights well.



No



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4. I am training a classification neural network with 5 hidden layers, sigmoid activation function, and [128, 64, 32, 16, 8] with learning_rate=0.05 and batch_size=32. I notice from TensorBoard that gradients in the third layer are near-zero. What would you try to fix this?



Increase the learning rate



Try using ReLU activation function

Correct

Correct. A ReLU will tend not to get caught in diminishing returns, the way a sigmoid can.



Add more layers to the DNN

