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Knowledge Checks

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DAT236x-M3-02

1/1 point (graded)

Activation functions can be very general, but they do have some requirements. Which of the following is a requirement of **any** activation function?

☒ It maps an input value to an output value ✓

☐ It maps an input value to the range 0 to 1

☐ It never produces a negative output value

☐ It has a predefined maximum input values

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✓ Correct (1/1 point)

DAT236x-M3-08

1/1 point (graded)

You have a Multi-layer perceptron network with the following characteristics:

- Input: 784
- First hidden layer
 - Output: 400
- Second hidden layer
 - Output: 200
- Output layer
 - Output: 10

Assuming you have bias weights in all nodes except for the input, how many learnable parameters are there? (Note: this network is similar to the one described in the lecture)

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You have used 1 of 2 attempts

✓ Correct (1/1 point)

DAT236x-M3-03

1/1 point (graded)

The characteristics of activation functions are defined in part by the range of values they produce. Which **three** activation functions can produce an output value that is less than 0?

☐ sigmoid☒ tanh☐ ReLu☒ leaky ReLu☒ MaxOut

You have used 1 of 2 attempts

✓ Correct (1/1 point)

DAT236x-M3-05

1/1 point (graded)

Multiple hidden layers enable models to discover/learn hierarchal features in the input data. Which **two** statements below describing hidden layers are true?

- ☐ a hidden layer must have the same number of nodes as the layer preceding it
- ☐ a hidden layer must have the same number of nodes as the layer following it
- ☒ a hidden layer may have different number of nodes as the layer preceding and following it
- ☒ a hidden layer is required for deep learning
- ☐ the number of nodes in each hidden layer of a network must be the same
- ☐ the activation function used in each hidden layer of a network must be the same
- ☐ hidden layer nodes never use bias weights



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DAT236x-M3-04

1/1 point (graded)

Some of the earliest activation functions used were found later to be subject to the saturation / vanishing gradient problem. Some of the more newly created ones were designed to combat this problem. Which **two** activation functions listed below are prone to saturation / vanishing gradient problem?

☒ sigmoid☒ tanh☐ ReLu☐ leaky ReLu☐ MaxOut

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DAT236x-M3-07

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For a Multi-layer perceptron network with 2 inputs, a hidden layer of 5 nodes, and an output layer of 3 nodes, how many learnable parameters are there, assuming you have bias weights in all nodes except for the input?

33



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DAT236x-M3-01

1/1 point (graded)

The lectures introduced you to a variety of activation functions. What are **two** purposes of **any** activation function?

- ☐ To convert output values to probabilities
- ☒ To map output values to a known range of values
- ☒ To introduce non-linearity into the network
- ☐ To make each output node differentiable for back propagation

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DAT236x-M3-06

1/1 point (graded)

We have seen that Multi-Layer Perceptron (MLP) models can be much more powerful than simple Linear Regression (LR) models. Let's say that you want to convert an LR model that does classification to an MLP model. What do you need to do?

- ☐ you need to reshape the input data to match the MLP input layer
- ☐ you need to change the activation function on the output layer
- ☒ you need to add 1 or more hidden layers ✓
- ☐ you need to change the number of nodes in the output layer to match the number of nodes on the last hidden layer
- ☐ you need to adjust the train Workflow
- ☐ you need to adjust the test Workflow

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You have used 1 of 2 attempts

✓ Correct (1/1 point)

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