Introduction to deep learning
Quiz, 10 questions

✔ **Congratulations! You passed!**

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1.
What does the analogy "AI is the new electricity" refer to?

◯ Similar to electricity starting about 100 years ago, AI is transforming multiple industries.

Correct
Yes. AI is transforming many fields from the car industry to agriculture to supply-chain...

◯ AI runs on computers and is thus powered by electricity, but it is letting computers do things not possible before.

◯ Through the "smart grid", AI is delivering a new wave of electricity.

◯ AI is powering personal devices in our homes and offices, similar to electricity.

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2.
Which of these are reasons for Deep Learning recently taking off? (Check the three options that apply.)

☐ We have access to a lot more computational power.

Correct
Yes! The development of hardware, perhaps especially GPU computing, has significantly improved deep learning algorithms' performance.

☐ Neural Networks are a brand new field.

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> ☐   Deep learning has resulted in significant improvements in important applications such as online advertising, speech recognition, and image recognition.

Correct
These were all examples discussed in lecture 3.

> ☐   We have access to a lot more data.

Correct
Yes! The digitalization of our society has played a huge role in this.
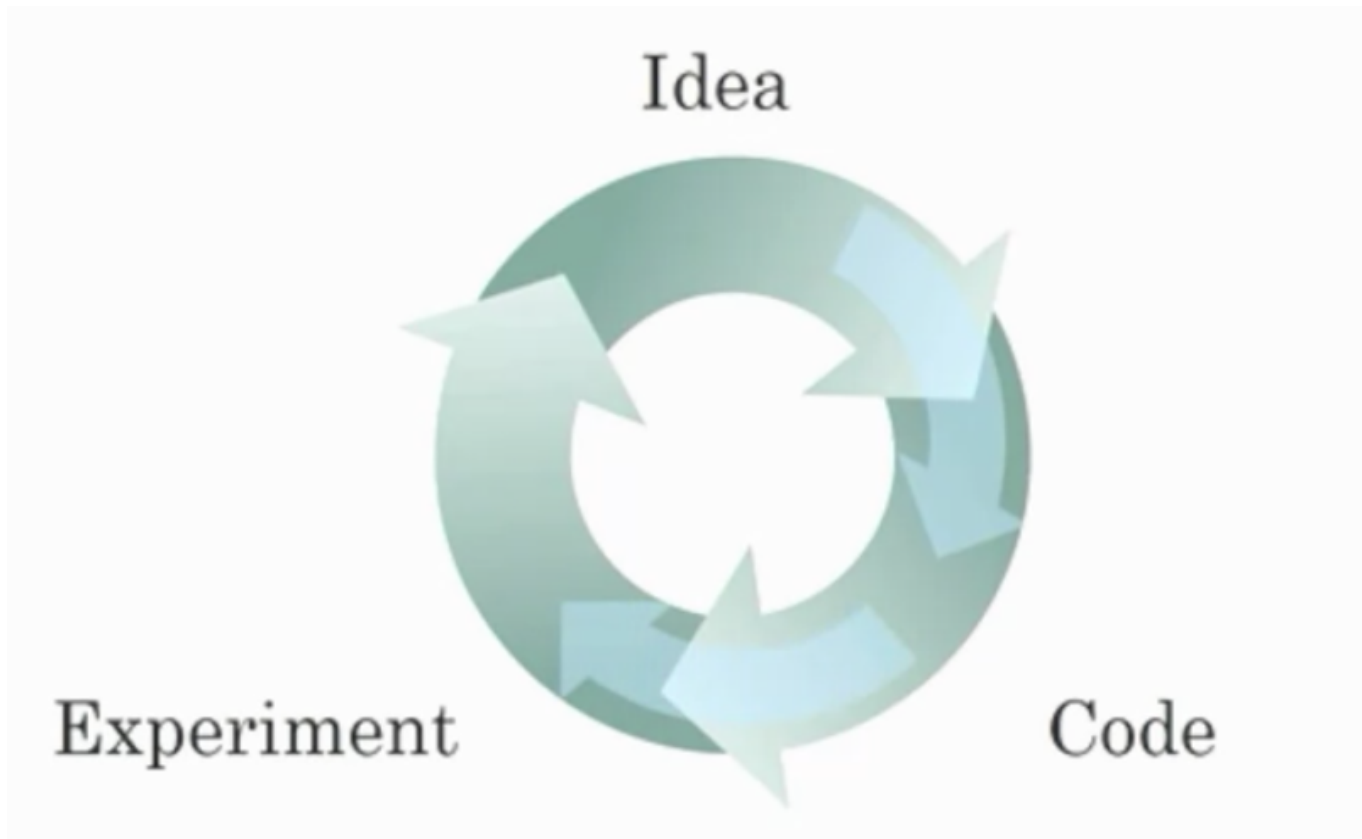

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3.

Recall this diagram of iterating over different ML ideas. Which of the statements below are true? (Check all that apply.)

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- [ ] Being able to try out ideas quickly allows deep learning engineers to iterate more quickly.

Correct
Yes, as discussed in Lecture 4.

- [ ] Faster computation can help speed up how long a team takes to iterate to a good idea.

Correct
Yes, as discussed in Lecture 4.

- [ ] It is faster to train on a big dataset than a small dataset.

Un-selected is correct

- [ ] Recent progress in deep learning algorithms has allowed us to train good models faster (even without changing the CPU/GPU hardware).

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Correct
Yes. For example, we discussed how switching from sigmoid to ReLU activation functions allows faster training.

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4.

When an experienced deep learning engineer works on a new problem, they can usually use insight from previous problems to train a good model on the first try, without needing to iterate multiple times through different models. True/False?

◯ True

◯ False

Correct
Yes. Finding the characteristics of a model is key to have good performance. Although experience can help, it requires multiple iterations to build a good model.
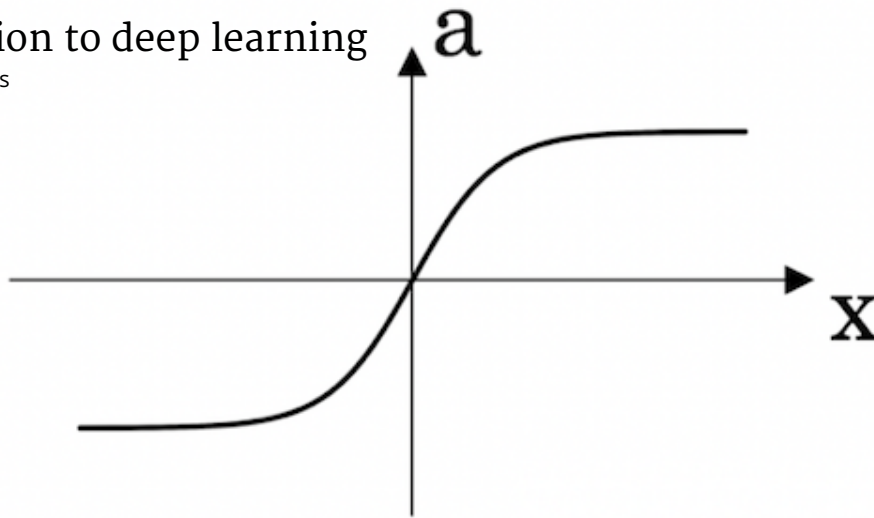

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5.

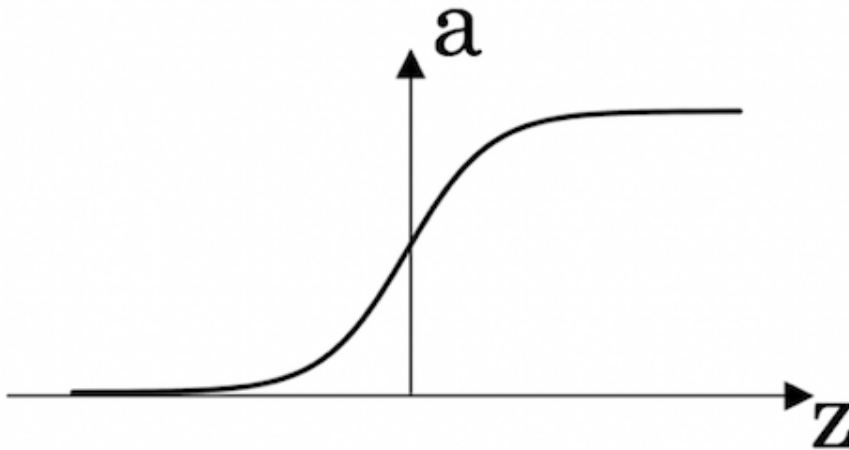Which one of these plots represents a ReLU activation function?

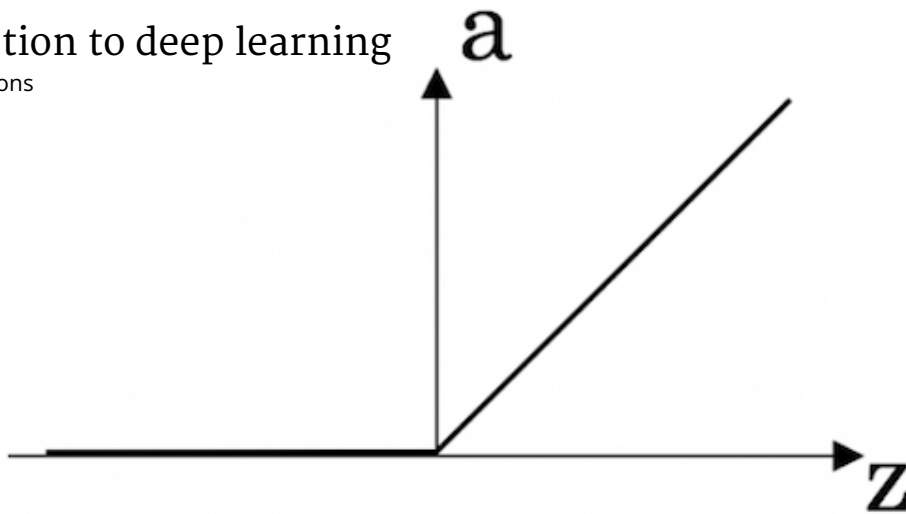◯ Figure 1:

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○ Figure 2:

○ Figure 3:
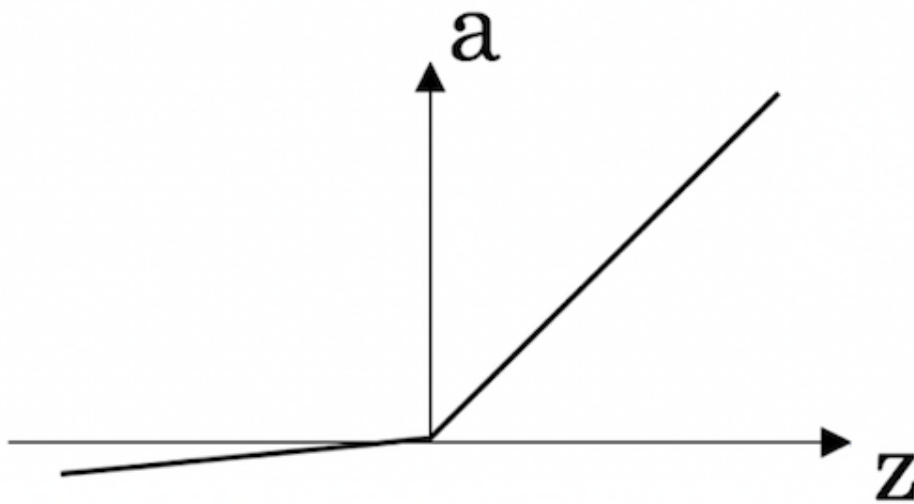
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a

Correct
Correct! This is the ReLU activation function, the most used in neural networks.

○   Figure 4:

a

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6.

Images for cat recognition is an example of "structured" data, because it is represented as a structured array in a computer. True/False?

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○ True

◉ False

▲

Correct
Yes. Images for cat recognition is an example of "unstructured" data.

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7.
A demographic dataset with statistics on different cities' population, GDP per capita, economic growth is an example of "unstructured" data because it contains data coming from different sources. True/False?

○ True

◉ False

▲

Correct
A demographic dataset with statistics on different cities' population, GDP per capita, economic growth is an example of "structured" data by opposition to image, audio or text datasets.

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8.
Why is an RNN (Recurrent Neural Network) used for machine translation, say translating English to French? (Check all that apply.)

☑ It can be trained as a supervised learning problem.

▲

Correct
Yes. We can train it on many pairs of sentences x (English) and y (French).

☐ It is strictly more powerful than a Convolutional Neural Network (CNN).

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Un-selected is correct

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☐ It is applicable when the input/output is a sequence (e.g., a sequence of words).

Correct

Yes. An RNN can map from a sequence of english words to a sequence of french words.

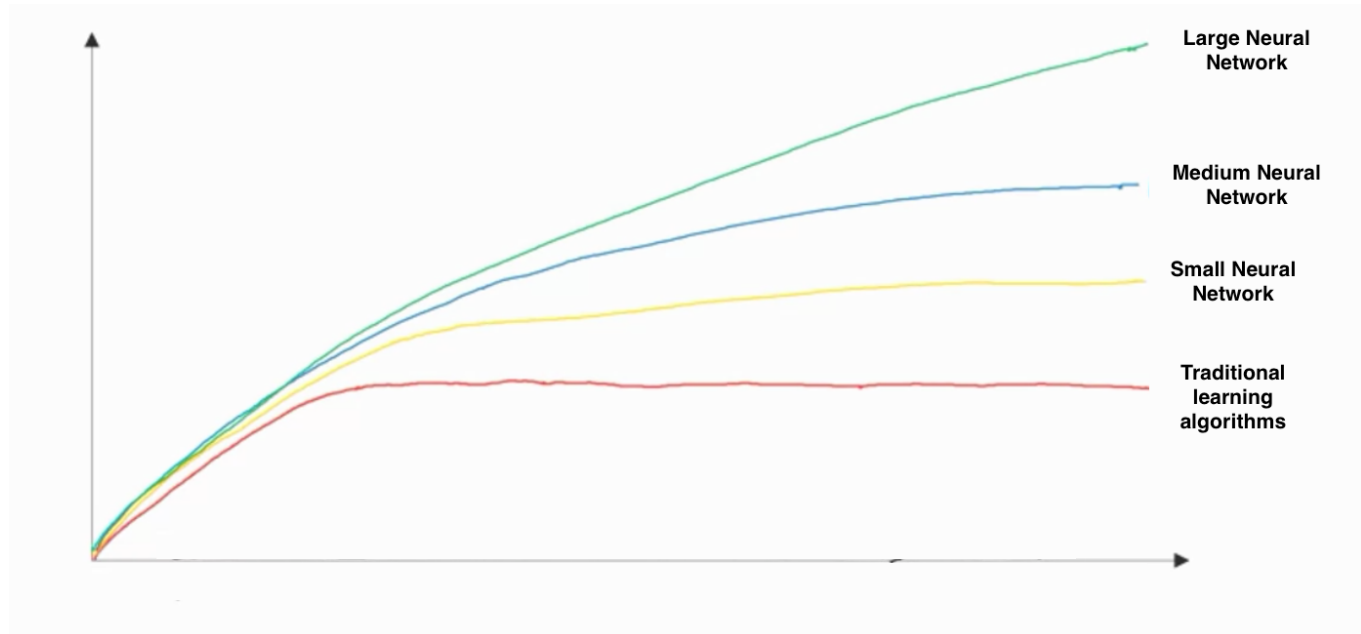☐ RNNs represent the recurrent process of Idea->Code->Experiment->Idea->....

Un-selected is correct

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9.

In this diagram which we hand-drew in lecture, what do the horizontal axis (x-axis) and vertical axis (y-axis) represent?

○ • x-axis is the performance of the algorithm

   • y-axis (vertical axis) is the amount of data.

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- x-axis is the amount of data
- y-axis (vertical axis) is the performance of the algorithm.

Correct

○
- x-axis is the amount of data
- y-axis is the size of the model you train.

○
- x-axis is the input to the algorithm
- y-axis is outputs.

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10.

Assuming the trends described in the previous question's figure are accurate (and hoping you got the axis labels right), which of the following are true? (Check all that apply.)

☑ Increasing the training set size generally does not hurt an algorithm's performance, and it may help significantly.

▲

Correct
Yes. Bringing more data to a model is almost always beneficial.

☑ Increasing the size of a neural network generally does not hurt an algorithm's performance, and it may help significantly.

▲

Correct
Yes. According to the trends in the figure above, big networks usually perform better than small networks.

☑ Decreasing the size of a neural network generally does not hurt an algorithm's performance, and it may help significantly.

▲

Un-selected is correct

☐ Decreasing the training set size generally does not hurt an algorithm's performance, and it may help significantly.

▲

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Un-selected is correct.

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