

CS-C1000 - Introduction to Artificial Intelligence, 02.03.2021-09.04.2021

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| Started on | Friday, 12 March 2021, 10:55 PM |
| State | Finished |
| Completed on | Friday, 12 March 2021, 11:40 PM |
| Time taken | 44 mins 36 secs |
| Grade | 9.00 out of 10.00 (90%) |

Question 1

Flag question Mark 0.00 out of 1.00 Incorrect

In the spirit of the lecture, how would you define Machine Learning (choose closest alternative).

Select one:

- ☐ a. Machine learning is a synonym for AI.
- ☒ b. Machine learning is simplified AI, focusing only on those things that really can be done. ✖
- ☐ c. Machine learning is concerned with tools that can do things that can be perceived as intelligent.

Your answer is incorrect.

Machine learning can be seen as a subfield of Artificial intelligence. ML is concerned with extracting knowledge from data and providing a pragmatic view on how machines can 'learn'.

The correct answer is: Machine learning is concerned with tools that can do things that can be perceived as intelligent.

Question 2

Flag question Mark 1.00 out of 1.00 Correct

What is 'training' in machine learning?

Select one:

- ☐ a. Training refers to choosing which algorithm to use for solving a problem.
- ☐ b. Training refers to choosing which data to collect for solving the problem.
- ☒ c. Training refers to learning (typically some parameters of the model). ✔

Your answer is correct.

'Training' can be seen as a synonym for 'learning'. Typically there is a training phase for a methods, during which the method is shown data that explains what it should learn to do.

The correct answer is: Training refers to learning (typically some parameters of the model).

Question 3

Flag question Mark 1.00 out of 1.00 Correct

Which one of the following statements related to data is *not* true?

Select one:

- ☐ a. Unlabeled data is typically easier to acquire.
- ☐ b. Labeled data means that the data samples have associated information attached to them.
- ☒ c. Synthetic data is always a good option for training. ✔

Your answer is correct.

Synthetic data can be useful for training, but can be hard to make as versatile as real data. Thus one can not say that synthetic data would generally be preferred. The two other claims are true.

The correct answer is: Synthetic data is always a good option for training.

Question 4

Flag question Mark 1.00 out of 1.00 Correct

A 'model' refers to to following:

Select one:

- ☐ a. 'Model' is the synonym for 'algorithm'.
- ☒ b. A model tries to describe a process that we think could create the data. ✔
- ☐ c. A model is the method that can solve the machine learning inference problem.

Your answer is correct.

The model encapsulates our belief of what type of process could be generating the data.

The correct answer is: A model tries to describe a process that we think could create the data.

Question 5

Flag question Mark 1.00 out of 1.00 Correct

What is probabilistic modelling?

Select one:

- ☐ a. It is a synonym for 'Data science'.
- ☐ b. Statistics, not machine learning.
- ☒ c. A part of machine learning that overlaps with statistics. ✔

Your answer is correct.

Probabilistic modelling refers to taking into account uncertainties (typically both in the inputs and outputs) of the phenomenon being studied, and thus typically dealing with not only *one* solution but a whole distribution of *possible* solutions.

The correct answer is: A part of machine learning that overlaps with statistics.

Question 6

Flag question Mark 1.00 out of 1.00 Correct

What do 'interpolation' and 'extrapolation' refer to? Find the right/closest alternative.

Select one:

- ☐ a. Interpolation is supervised learning. Extrapolation is unsupervised learning.
- ☒ b. Interpolation is filling gaps between training data. Extrapolation is exploring outside training data. ✔
- ☐ c. Interpolation is using the training data. Extrapolation is using test data.

Your answer is correct.

Interpolation can be seen as filling in information between known data, while extrapolation is extending the predictions outside the boundaries of known data.

The correct answer is: Interpolation is filling gaps between training data. Extrapolation is exploring outside training data.

Question 7

Flag question Mark 1.00 out of 1.00 Correct

You are given medical records with peoples age, measures, habits, etc. and the knowledge whether or not they have a certain medical condition. Your task is to create a machine learning method that can then ask a new person for his/her age, measures, habits, etc. and then predict whether or not they are in the risk group for that medical condition. What would you do?

Select one:

- ☐ a. You design a model that can be trained with unsupervised learning.
- ☒ b. You design a model that can be trained with supervised learning. ✔
- ☐ c. You design a model that uses active learning.

Your answer is correct.

The data has clear input-output pairs. This would be a good case for supervised learning.

The correct answer is: You design a model that can be trained with supervised learning.

Question 8

Flag question Mark 1.00 out of 1.00 Correct

Reinforcement learning can be a useful tool for (choose the closest alternative):

Select one:

- ☐ a. For feature learning, where data the underlying structure of data is discovered.
- ☐ b. For fraud detection.
- ☒ c. For autonomous robots. ✔

Your answer is correct.

Reinforcement learning is commonly used in situations where an AI agent like a self-driving car or a robot must operate in an environment and where feedback about good or bad choices is available.

The correct answer is: For autonomous robots.

Question 9

Flag question Mark 1.00 out of 1.00 Correct

Which one of these statements makes sense in the light of the lecture:

Select one:

- ☐ a. Large training data sets tend to lead to overfitting during training.
- ☒ b. If there is not much training data, it is no use trying to use a very complicated model. ✔
- ☐ c. Cross-validation should be used if the model is very complicated.

Your answer is correct.

- Overfitting: A lot of data, but a very simple model that cannot capture all the information.
- Overfitting: A too complicated model that adapts to variation in the data, even if the variation is just noise.

The correct answer is: If there is not much training data, it is no use trying to use a very complicated model.

Question 10

Flag question Mark 1.00 out of 1.00 Correct

Why should we care about the interpretability of machine learning models?

Select one:

- ☐ a. We really do not need to care at all.
- ☐ b. Interpretable white box models are more efficient.
- ☒ c. We want to understand what the ML method did and why. ✔

Your answer is correct.

Well, sometimes it is enough to be pragmatic (whatever works well, is good!). However, often we also want to know why and how a ML method reached its decision. Then we need *white box* or *gray box* models.

The correct answer is: We want to understand what the ML method did and why.

Finish review

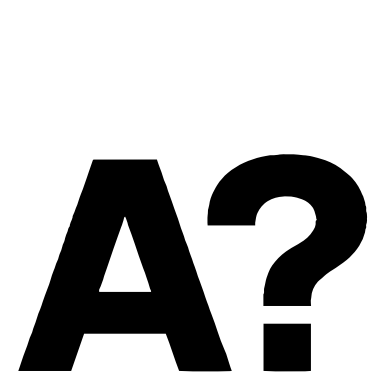
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