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Grade received 80.55% To pass 80% or higher

Go to next item

AutoML

Total points 9

1. Can Neural Architecture Search (NAS) be seen as a subfield of AutoML?

1 / 1 point

☒ Yes

☐ No

✔ Correct

Exactly! NAS can be seen as a subfield of AutoML and has significant overlap with hyperparameter optimization and meta-learning.

2. Which of the following are dimensions of the Neural Architecture Search (NAS) technique? (Select all that apply)

1 / 1 point

☒ Performance Estimation Strategy

✔ Correct

You got it! The objective of NAS is typically to find an architecture with the highest predictive performance.

☒ Search Space

✔ Correct

Right! The search space defines the range of architectures that can be represented.

☐ Training and Validation of the Architecture

☒ Search Strategy

✔ Correct

Keep it up! The search strategy details how to explore the search space.

3. What does the search space allow in Neural Architecture Search (NAS)? (Select all that apply)

0.25 / 1 point

☒ Restricting unbounded search spaces to have a maximum depth.

✔ Correct

Great job! It gives rise to search spaces with (potentially many) conditional dimensions.

☐ Defining which neural architectures we might discover in principle.

☐ Reducing the size of the search space incorporating prior knowledge about well-suited properties.

☒ Defining how we explore the search space.

✘ This should not be selected

Not quite. Finding the strategy corresponds to a later stage of Neural Architectures Search (NAS).

4. In the chain-structured Neural Network Architecture (NNA), space is parametrized by (Select all that apply):

0.75 / 1 point

☒ Hyperparameters associated with the operation.

✔ Correct

Well done! Search space is related to the number of units for fully connected networks.

☐ The multiple branches with additional layers types and skip connections.

☒ The operation every layer can execute.

✔ Correct

Excellent!. Among the most common operations are pooling, convolution, and more advanced layers.

☐ A number of n sequentially fully-connected layers.

You didn't select all the correct answers

5. What are the main features of **Automated Machine Learning** (AutoML)? (Select all that apply)

0.25 / 1 point

- ☐ AutoML technologies democratize AI with customized state-of-the-art machine learning.
- ☒ AutoML is the process of automating architecture engineering and finding the design of machine learning models.

✗ **This should not be selected**
Not really. Nowadays, some researchers mistakenly equate AutoML with neural architecture search (NAS). However, a clear distinction is required, as the process of automating architecture engineering is strictly called NAS.

- ☐ AutoML aims to automate the decision-making in a data-driven and objective way.
- ☒ AutoML aims to automate the end-to-end process of machine learning to produce simpler and faster solutions.

✓ **Correct**
Indeed! AutoML enables developers -even those with minimal experience in machine learning- to readily produce simple, optimal solutions.

6. What are the two main types of search spaces?

1 / 1 point

- ☒ Macro and Micro
- ☐ Complex and Simple
- ☐ Big and Small
- ☐ Long and Short

✓ **Correct**
Good job! Although their names are kind of backwards, that's what they're called.

7. In measuring AutoML efficacy, several strategies have been proposed to reduce performance cost estimation, including (Select all that apply):

1 / 1 point

- ☐ Reinforcement learning
- ☒ Learning Curve Extrapolation

✓ **Correct**
Nicely done! Extrapolation is a sensitive and valid choice based on the assumption that the learning curve can be reliably predicted.

- ☒ Lower fidelity estimates

✓ **Correct**
Yes! Lower fidelity estimates try to reduce the training time by reframing the problem.

- ☒ Weight Inheritance/ Network Morphisms

✓ **Correct**
Nailed it! Using network morphism, the weights of novel architectures are initialized based on the weights in previously trained architectures.

8. The **lower fidelity estimates** are a performance estimation strategy that allows (Select all that apply):

1 / 1 point

- ☒ Training on lower-resolution

✓ **Correct**
That's it! The lower fidelity reduces the computational cost as a result.

- ☒ Training on a subset of the data

✓ **Correct**
Correct! It also reduces training times.

- ☐ Training for a few epochs
- ☒ Training with less filters per layer

✔ **Correct**
Way to go! The lower fidelity estimates strategy uses fewer filters per layer and fewer cells.

9. Can **network morphism** modify an architecture while leaving the network's function unchanged?

1 / 1 point

- ☐ No
- ☒ Yes

✔ **Correct**
Exactly! This property increases the network's capacity retaining a high performance as a result.