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

- ○ No
- ◉ Yes

Correcto
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 punto**

- ☑ Performance Estimation Strategy

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

- ☐ Training and Validation of the Architecture
- ☑ Search Strategy

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

- ☑ Search Space

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

3. What does the search space allow in Neural Architecture Search (NAS)? (Select all that apply) **1 / 1 punto**

- ☑ Restricting unbounded search spaces to have a maximum depth.

Correcto

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

- [ ] Defining how we explore the search space.

- [x] Reducing the size of the search space incorporating prior knowledge about well-suited properties.

  Correcto
  That's right! This task can simplify the search space.

- [x] Defining which neural architectures we might discover in principle.

  Correcto
  You're right on track!. The search space defines which architectures can be represented.

4. In the chain-structured Neural Network Architecture (NNA), space is parametrized by (Select all that apply): **1 / 1 punto**

- [x] A number of n sequentially fully-connected layers.

  Correcto
  Spot on! A chain-structured NNA can be written as a sequence of n layers.

- [ ] The multiple branches with additional layers types and skip connections.
- [x] Hyperparameters associated with the operation.

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

- [x] The operation every layer can execute.

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

5. What are the main features of **Automated Machine Learning** (AutoML)? (Select all that apply) **1 / 1 punto**

- [ ] AutoML is the process of automating architecture engineering and finding the design of machine learning models.
- [x] AutoML aims to automate the decision-making in a data-driven and objective way.

Correcto
Correct! AutoML determines the approach that works best for a certain application.

- [x] AutoML technologies democratize AI with customized state-of-the-art machine learning.

Correcto
That's true! AutoML seeks to make state-of-the-art machine learning approaches accessible to data scientists with limited machine learning expertise.

- [x] AutoML aims to automate the end-to-end process of machine learning to produce simpler and faster solutions.

Correcto
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 punto**

- ( ) Complex and Simple
- ( ) Big and Small
- ( ) Long and Short
- (•) Macro and Micro

Correcto
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 punto**

- [x] Weight Inheritance/ Network Morphisms

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

- [x] Lower fidelity estimates

  Correcto
  Yes! Lower fidelity estimates try to reduce the training time by reframing the problem.

- [x] Learning Curve Extrapolation

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

- [ ] Reinforcement learning

8. The **lower fidelity estimates** are a performance estimation strategy that allows (Select all that apply): **1 / 1 punto**

- [x] Training with less filters per layer

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

- [x] Training on a subset of the data

  Correcto
  Correct! It also reduces training times.

- [ ] Training for a few epochs
- [x] Training on lower-resolution

Correcto

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

9. Can **network morphism** modify an architecture while leaving the network's function unchanged? **1 / 1 punto**

- ○ No
- ◉ Yes

Correcto

Exactly! This property increases the network’s capacity retaining a high performance as a result.