

## EXAM SIMULATION To TEST your preparation

.Q1

Nowadays, the usage of classical feature extraction and data analysis methods is outdated since the capability of the recent deep learning models and methods made them obsolete and not more present in the common practice.

1. True
- 2. False**

Comment: most part of the job is about prepare, study and validate the data to create efficient datasets, also with classical tools!

..Q2

Artificial Intelligence can be applied to the following sectors

1. Robotics
2. Information extraction
- 3. All the above**

Comment: the range of applications is really exploding including 1) and 2)

...Q3

Artificial neural networks are capable to learn human biases.

1. False: the achievable complexity of the artificial neural networks is so far from the complexity of the human brain to make impossible to mimic this characteristic
2. False: human biases are not reproducible nor measurable
- 3. True.**

Comment: it's true because the humans prepare the datasets, and the statistical distribution of the samples among different labels and classes can strongly influence the learning of the artificial intelligent models.

....Q4

Recent artificial intelligence models can solve analogy puzzles like "Paris is to France as Tokyo is to ?" producing the correct answer "Japan."

- 1. True**
2. False

Comment: yes. So-called "word embeddings" that are often used as input for a neural network are learned from large text collections and are able to solve analogy puzzles.

.....Q5

Considering the "Data knowledge spectrum plot" discussed in class, the *minimum* amount of data required is in the following case.

1. No knowledge about the model generating the data is available
2. A statistical model of the process is available
- 3. A mathematical model of the process is available**

Comment: since just some parameters of the mathematical model must be tuned/fitted, the number of needed data is less than the amount needed to train the complete model with no a-priori information.

.....Q6

It is possible to think to the single datum in input to the neural network as a point in the “input space” of the model, even if the input is a single value, a N dimensional vector, or an image

1. **True**
2. False

Comment: yes, that is exactly the correct representation that will allow to understating under a common framework the artificial intelligence models

.....Q7

It is correct to say the one of the key feature of an intelligent artificial system is the capability to learn (even if only a limited sense) and/or get better in time

1. **True**
2. False

Comment: One can debate endlessly about whether a certain system is intelligent or not, but the capability to learn is one of the most important

.....Q8

According to the Andries Engelbrecht definition of Computational intelligence what of the following is not included?

1. Artificial Neural Networks
2. Evolutionary Computing
3. Swarm Intelligence
4. Artificial immune system
5. Fuzzy Systems
6. **All the above are included**

.....Q9

According to the class discussion of the Gestalt capability what of the following sentences is more correct?

1. The Gestalt capability is a typical feature present by-design in the model of classical neural networks
2. The Gestalt capability is a typical feature present by-design in the model of deep learning neural networks
3. **The Gestalt capability is a typical human feature not well (yet) mimicked in current artificial networks**

Comment: just let's think to this example...

.....Q10

The following activity:

a) Data Selection;

b) Data Filtering;

c) Data Enhancing...

1. Are part of the job of the artificial intelligent specialist in normal activities

2. Contribute to keep lower the complexity of the learning task

**3. All the above**

4. Are part of the classical machine learning approaches and they are (correctly) no longer used in deep learning applications

Comment: a), b) and c) are extremely important in the final behavior of the trained model and the complexity of the training task.