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QUESTION NO: 1

If AI undertakes routine and monotonous tasks and takes these away from humans, what will humans do?

A. Higher value work.

B. Leisure activities

C. Change jobs.

D. Sabotage the AI.

ANSWER: A

Explanation:

AI is designed to take on routine and monotonous tasks, freeing up humans to take on more complex, higher value work. This can include tasks such as research, problem-solving, and decision-making. This shift in work roles is expected to increase productivity and efficiency, allowing humans to focus on more creative and innovative tasks. For example, robots can be used to automate mundane manufacturing processes, freeing up human workers to take on jobs that require more creative thinking and problem-solving.

References: [1] https://www.bcs.org/upload/pdf/foundation-certificate-ai-syllabus-v1.pdf [2] https://www.apmg-international.com/en/qualifications-and-certifications/bc-foundation-certificate-in-artificial-intelligence/ [3] https://www.exin.com/en/certifications/bc-foundation-certificate-in-artificial-intelligence/

QUESTION NO: 2

What technique can be adopted when a weak learners hypothesis accuracy is only slightly better than 50%?

A. Over-fitting

B. Activation.

C. Iteration.

D. Boosting.

ANSWER: D

Explanation:

More formally, the notion has been generalized to multi-class classification and has a different meaning beyond better than 50 percent accuracy.

For binary classification, it is well known that the exact requirement for weak learners is to be better than random guess. […] Notice that requiring base learners to be better than random guess is too weak for multi-class problems, yet requiring better than 50% accuracy is too stringent.

— Page 46, Ensemble Methods, 2012.

It is based on formal computational learning theory that proposes a class of learning methods that possess weakly learnability, meaning that they perform better than random guessing. Weak learnability is proposed as a simplification of the more desirable strong learnability, where a learnable achieved arbitrary good classification accuracy.

A weaker model of learnability, called weak learnability, drops the requirement that the learner be able to achieve arbitrarily high accuracy; a weak learning algorithm needs only output an hypothesis that performs slightly better (by an inverse polynomial) than random guessing.

— The Strength of Weak Learnability, 1990.

It is a useful concept as it is often used to describe the capabilities of contributing members of ensemble learning algorithms. For example, sometimes members of a bootstrap aggregation are referred to as weak learners as opposed to strong, at least in the colloquial meaning of the term.

More specifically, weak learners are the basis for the boosting class of ensemble learning algorithms.

The term boosting refers to a family of algorithms that are able to convert weak learners to strong learners.

https://machinelearningmastery.com/strong-learners-vs-weak-learners-for-ensemble-learning/

The best technique to adopt when a weak learner's hypothesis accuracy is only slightly better than 50% is boosting. Boosting is an ensemble learning technique that combines multiple weak learners (i.e., models with a low accuracy) to create a more powerful model. Boosting works by iteratively learning a series of weak learners, each of which is slightly better than random guessing. The output of each weak learner is then combined to form a more accurate model. Boosting is a powerful technique that has been proven to improve the accuracy of a wide range of machine learning tasks. For more information, please see the BCS Foundation Certificate In Artificial Intelligence Study Guide or the resources listed above.

QUESTION NO: 3

Splitting data into Training and Test data sets is part of what?

A. Machine learning data preparation.

B. Batch learning.

C. Machine learning post processing.

D. High performance computing strategy.

ANSWER: A

Explanation:

Splitting data into training and test data sets is an important step in the machine learning data preparation process. This process involves splitting the data into subsets, usually in a 70:30 ratio, to create a training set and a test set. The training set is used to train the machine learning model, while the test set is used to evaluate the model's performance. This process allows for the model to be tested and evaluated on data that it has not seen before, in order to ensure that it is accurate and able to generalize to new data. References: BCS Foundation Certificate In Artificial Intelligence Study Guide, https://bcs.org/certifications/foundation-certificates/artificial-intelligence/

QUESTION NO: 4

In the 1800's the development of statistics led to_____theorem and is used in probabilistic inference. (Select the missing word.)

A. Boltzmann's

B. Kolmogorov's

C. Bayes'

D. The central limit

ANSWER: C

Explanation:

The development of statistics in the 1800s led to the development of the Bayes' theorem, named after Reverend Thomas Bayes. This theorem is used in probabilistic inference, which is the process of using data to calculate the likelihood of a hypothesis or outcome. The theorem is used for determining the probability of an event occurring given its prior probability, as well as its associated conditions. The Bayes' theorem is also used in a variety of fields, such as machine learning, artificial intelligence, economics, and medical research. Sources:

QUESTION NO: 5

What is defined as a philosophy, or set of assumptions and/or techniques, which characterise an approach to a class of problems?

A. An approach.

B. A set

C. A paradigm.

D. An algorithm.

ANSWER: C

Explanation:

A paradigm is defined as a philosophy, or set of assumptions and/or techniques, which characterise an approach to a class of problems. Paradigms are often used in Artificial Intelligence to provide a structure for problem solving, allowing for better understanding of the problem and providing a framework for developing a solution. For example, the logic-based approach is a paradigm that uses logical reasoning to solve problems.

For more information, please refer to the BCS Foundation Certificate in Artificial Intelligence Study Guide: https://www.bcs.org/category/18076/bcs-foundation-certificate-in-artificial-intelligence-study-guide.