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QUESTION 1

An intelligent robot uses Al to do what?

A. Sense, plan and act

B. Plan, act and speak.

C. Perceive, plan and act.

D. Sense, plan and move.

Correct Answer: C

An intelligent robot uses Artificial Intelligence (AI) to perceive its environment, plan its actions and then act on them. This is sometimes referred to as the "sense, plan, act" cycle, and is at the heart of what makes a robot intelligent. By using

AI, robots can sense their environment, plan their actions accordingly and then act on them in order to complete their tasks.

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.

QUESTION 2

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

Correct Answer: C

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:

BCS Foundation Certificate In Artificial Intelligence Study Guide: https://www.bcs.org/category/18071

APMG International: https://www.apmg-international.com/en/qualifications/qualification-resources/bcs-foundation-certificate-in-artificial-intelligence/

EXIN: https://www.exin.com/en/certification/bcs-foundation-certificate-in-artificial- intelligence

QUESTION 3

Narrow or weak AI can be useful to robots.

Which of the following is an example of narrow AI?

A. Conscious simul-ation.

B. Artificial General AI.

C. Conscious integration.

D. NLP - Natural Language Processing.

Correct Answer: D

NLP - Natural Language Processing is an example of narrow AI. It is a type of AI system that is able to understand, interpret, and generate natural language. NLP has become increasingly popular over the past few years, as it has been used

to create applications such as chatbots, virtual assistants, and search engines. NLP systems are able to learn language and the context in which it is used, and they are able to understand the nuances of language and its different meanings.

References:

BCS Foundation Certificate In Artificial Intelligence Study Guide, https://bcs.org/certifications/foundation-certificates/artificial-intelligence/

QUESTION 4

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.

Correct Answer: D

Weak Learner: Colloquially, a model that performs slightly better than a naive model.

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 5

In Machine learning what are a brain\\'s axons called?

A. Dendrites

B. Edges

C. Tetrahedra.

D. Nodes

Correct Answer: D

In Machine Learning, the brain\\'s axons are referred to as nodes. Nodes are the components of a neural network that are responsible for processing the input data and generating the output. A node is a mathematical function that takes input data, performs a computation on it, and produces an output. Each node is connected to other nodes in the network via edges, which represent the strength of the connection between the respective nodes. The strength of the connection between two nodes is determined by the weights assigned to each edge. The weights are adjusted during the training

process to generate the desired results. For more information, please refer to the BCS Foundation Certificate In Artificial Intelligence Study Guide (https://www.bcs.org/upload/pdf/bcs-foundation-certificate-in-artificial-intelligence-study-guide.pdf) or the EXIN Artificial Intelligence Foundation Certification (https://www.exin.com/en/exams/artificial-intelligence-foundation).