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QUESTION 1

What are monotonous and repetitive tasks, that require accuracy BEST suited to?

A. Human plus machine.

B. Machine.

C. Human.

D. Artificial General Intelligence.

Correct Answer: B

Monotonous and repetitive tasks that require accuracy are best suited to machines. Machines are able to accurately and quickly perform tasks that require little to no creativity, such as data entry or image recognition. This is because machines are able to process large amounts of data quickly and accurately, and are less likely to make mistakes than humans. Additionally, machines are able to process large amounts of data without becoming bored or distracted, making them ideal for tasks that require consistent accuracy. For more information, please see the BCS Foundation Certificate In Artificial Intelligence Study Guide or the resources listed above. Search results: BCS Foundation Certificate in Artificial Intelligence Study Guide, Chapter 4: Machine Learning: https://www.bcs.org/category/19669

QUESTION 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.

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 3

Sustainability focuses on which three core areas?

A. Scientific, Environmental and Economic.

B. Social, Economic and Environmental.

C. Social, Economic and Entrepreneurial.

D. Social, Entrepreneurial and Environmental.

Correct Answer: B

The term sustainability is broadly used to indicate programs, initiatives and actions aimed at the preservation of a particular resource. However, it actually refers to four distinct areas: human, social, economic and environmental ?known as the

four pillars of sustainability.

https://www.futurelearn.com/info/courses/sustainable-business/0/steps/78337#:~:text=However%2C%20it%20actually%20refers%20to,the%20four%20pillars%20of%20sustainability.andtext=Human%20sustainability%20aims%20to%20maintain%20and%20improve%20the%20human%20capital%20in%20society. Sustainability focuses on these three core areas because they all have an impact on the environment and society. Social sustainability is concerned with the

relationships between people and how to create a society that is equitable and fair for all members. Economic sustainability focuses on the creation of a viable economic system that provides for the needs of the present without compromising

the ability of future generations to meet their own needs. Environmental sustainability focuses on protecting natural resources, ecosystems and habitats, and minimizing the impact of human activities on the environment.

References: https://www.bcs.org/more/certifications/foundation-certificate-in-artificial-intelligence/

https://www.apmg-international.com/en-gb/courses/sustainability/sustainability-foundation-and-certification/

QUESTION 4

What is defined as a machine that can carry out a complex series of tasks automatically?

A. A robot

B. A production line.

C. A computer.

D. An autonomous vehicle.

Correct Answer: C

A computer is defined as a machine that can carry out a complex series of tasks automatically. Computers are used in a variety of applications, including artificial intelligence (AI), robotics, production lines, and autonomous vehicles.

Computers are able to carry out complex tasks thanks to their ability to process large amounts of data quickly and accurately.

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 5

An Al agent relies on its perceptual input. This is called the agent\\'s what?

A. Position

B. Environment

C. World

D. Percept

Correct Answer: D

Performance Measure of Agent It is the criteria, which determines how successful an agent is.

Behavior of Agent It is the action that agent performs after any given sequence of percepts.

Percept It is agent\\'s perceptual inputs at a given instance. Percept Sequence It is the history of all that an agent has

perceived till date. Agent Function It is a map from the precept sequence to an action.

Agent Terminology

https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_agents_and_environments.htm

An AI agent relies on its perceptual input, which is referred to as the agent\\'s percept. This is the data that the agent collects through its sensors about its environment. The percept allows the agent to make decisions and take actions based on

its environment. The agent\\'s percept is important for Artificial Intelligence systems to be able to operate effectively.

References:

[1] BCS Foundation Certificate In Artificial Intelligence Study Guide, "Reinforcement Learning", p.96-97.

[2] APMG-International.com, "Foundations of Artificial Intelligence"

[3] EXIN.com, "Foundations of Artificial Intelligence"