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QUESTION 1

The Scrum Master is part of which team?
A. Software development team.
B. Data preparation team
C. Agile project team.
D. Management team
Correct Answer: C
https://www.techtarget.com/whatis/definition/scrum-master#:~:text=A%20Scrum%20Master%20is%20a,in%20accordance%20with%20Agile% 20principles.
The Scrum Master is part of the agile project team, and is responsible for ensuring that the team is following the Scrum process. The Scrum Master is the facilitator of the team, ensuring that the team is working together and following the
Scrum principles. They are also responsible for protecting the team from any external influences and helping resolve any issues that may arise.
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/
[4] https://www.scrumguides.org/scrum-guide.html
QUESTION 2
What function is used in a Neural Network?
A. Linear.
B. Activation.
C. Statistical.
D. Trigonometric.
Correct Answer: B

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Activation Functions An activation function in a neural network defines how the weighted sum of the input is transformed into an output from a node or nodes in a layer of the network. https://machinelearningmastery.com/choose-an-activation-function-for-deeplearning/#:~:text=An%20activation%20function%20in%20a,a%20layer%20of%20the%20ne twork. An



activation function is a mathematical function used in a neural network to determine the output of a neuron. Activation functions are used to transform the inputs into an output signal and can range from simple linear functions to complex non-linear functions. Activation functions are an important part of neural networks and help the network learn patterns and generalize data. Types of activation functions include sigmoid, ReLU, tanh, and softmax. References: BCS Foundation Certificate In Artificial Intelligence Study Guide, https://bcs.org/certifications/foundation-certificates/artificial-intelligence/

QUESTION 3

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 multiclass 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 4

How could machine learning make a robot autonomous?

- A. Use OCR, optical character recognition, to read documents
- B. Use NLP (Natural Language Processing) to listen
- C. Use actuators to modify its environment
- D. Learn from sensor data and plan to carry out a task.

Correct Answer: D

Machine learning can be used to make robots autonomous by allowing them to learn from sensor data and plan how to carry out a task. This involves using algorithms to analyze data from sensors and use this data to make decisions and

take actions. By using machine learning, robots can learn from their environment and become more autonomous.

References:

- [1] BCS Foundation Certificate In Artificial Intelligence Study Guide, "Robotics", p.98.
- [2] APMG-International.com, "Foundations of Artificial Intelligence"
- [3] EXIN.com, "Foundations of Artificial Intelligence"

QUESTION 5

From the EII\\'s ethics guidelines for AI, what does \\'The Principle of Autonomy,\\' mean?

- A. Robots will have freewill.
- B. Al agents will behave as humans.
- C. Al systems will be human-centric
- D. Al systems will preserve human agency.

Correct Answer: D

The Principle of Autonomy from the ELL\\'s ethics guidelines for AI states that AI systems should be designed in a way



that preserves human agency and responsibility. This means that Al systems should be designed in a way that allows humans to remain in control of their decisions, and that the Al system should not be able to act without human input or permission. References: BCS Foundation Certificate In Artificial Intelligence Study Guide, https://bcs.org/ai/certificate/ and APMG International, https://www.apmg-international.com/qualifications/artificial-intelligence-foundation-certificate.

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