Question 1

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

Options:

A- Human plus machine.

B- Machine.

C- Human.

D- Artificial General Intelligence.

Answer:

B

Explanation:

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

Question Type: MultipleChoice

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

Options:

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:

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

Question Type: **MultipleChoice**

What function is used in a Neural Network?

A- Linear.

B- Activation.

C- Statistical.

D- Trigonometric.

Answer:

B

Explanation:

Activation Functions

Anactivation functionin 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-deep-learning/#:~:text=An%20activation%20function%20in%20a,a%20layer%20of%20the%20network.

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 4

Question Type: MultipleChoice

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

Options:

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 5

Question Type: MultipleChoice

Narrow or weak AI can be useful to robots.

Which of the following is an example of narrow AI?

Options:

A- Conscious simul-ation.

B- Artificial General AI.

C- Conscious integration.

D- NLP - Natural Language Processing.

Answer:

D

Explanation:

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 6

Question Type: **MultipleChoice**

Which of the following is an example of fitting a curve to a set of data?

Options:

A- Python.

B- Least squares regression.

C- Bayesian network.

D- Backward propagation.

Answer:

B

Explanation:

Least Squares Regression is a statistical technique used for fitting a curve to a set of data. It involves minimizing the sum of the squares of the differences between the observed data and the fitted curve. This is done by finding the line of best fit, which is the line that minimizes the sum of the squared residuals. The line of best fit is determined by finding the parameters that give the minimum sum of the squared residuals. This technique is often used in data science and machine learning to create models that can be used to make predictions. References: BCS Foundation Certificate In Artificial Intelligence Study Guide,https://bcs.org/certifications/foundation-certificates/artificial-intelligence/

Question 7

Para View allows large data sets to be visualised on a parallel computer.

Which of the following is one of the techniques used?

Options:

A- Norm calculation.

B- Dashboard.

C- Contour plot

D- Eigen function analysis.

Answer:

C

Explanation:

ParaView is an open-source, multi-platform visualization application that allows large data sets to be visualized on a parallel computer. ParaView uses a variety of techniques to visualize data, including contour plots, which are useful for visualizing 3D data sets. Contour plots are created by plotting a set of curves connecting points of equal value, with each curve representing a particular value. This allows 3D data sets to be visualized in a 2D format, making it easier to understand the data.

References: [1] BCS Foundation Certificate In Artificial Intelligence Study Guide, Page number 19 [2] APMG International, "What is ParaView?",https://apmg-international.com/en/blog/what-is-paraview/[3] EXIN, "What is ParaView?",https://www.exin.com/blog/what-is-paraview/

Question 8

Question Type: **MultipleChoice**

A vector in vector calculus is a quantity that has magnitude and direction.

What is a vector in computer programming?

Options:

A- An array with one dimension.

B- A two-dimensional array of scalars.

C- An array of complex numbers

D- A constant

Answer:

A

Explanation:

In computer programming, a vector is a data structure that contains a collection of elements that are all of the same type. Each element in the vector has an associated index, which can be used to access and modify the element at that index. Vectors are commonly used to store collections of numerical values (e.g., integers or floating-point numbers) or strings, but they can also be used to store any type of data.

References: [1] BCS Foundation Certificate In Artificial Intelligence Study Guide, Page number 36 [2] APMG International, "What is a Vector in Computer Programming?",https://apmg-international.com/en/blog/what-is-a-vector-in-computer-programming/[3] EXIN, "What is a Vector in Computer Programming?",https://www.exin.com/blog/what-is-a-vector-in-computer-programming/

Question 9

Question Type: **MultipleChoice**

Which factor of a Waterfall' approach is most likely to result in the failed delivery of an AI project?

Options:

A- Takes longer to deliver all functional requirements.

B- Discourages collaboration and cross boundary communication.

C- Takes longer to complete the design phase of the project.

D- Discourages revisiting and revising any prior phase once it is complete.

Answer:

D

Explanation:

The Waterfall approach is a sequential design process in which each phase of development must be completed before the next phase can begin. This means that once a phase is complete, it is difficult to go back and make changes, as any changes made to the project could potentially affect all the other phases. As a result, the Waterfall approach can make it difficult to adapt to changing customer requirements or adjust to new technology. This can ultimately lead to the failed delivery of an AI project.

References: [1] BCS Foundation Certificate In Artificial Intelligence Study Guide, Page number 19 [2] APMG International, "What is a Waterfall Model?",https://apmg-international.com/en/blog/what-is-a-waterfall-model/[3] EXIN, "What is the Waterfall Model?",https://www.exin.com/blog/what-is-the-waterfall-model/

Question 10

In an AI project the domain expert is the person...

Options:

A- with technical and managerial oversight of the business plan

B- who manages the agile project and writes the technical terms of reference

C- who measures the trustworthiness of the AI system

D- with special knowledge or skills in the area of endeavour and defines what is fit for purpose'

Answer:

D

Explanation:

In an AI project, a domain expert is a person with special knowledge or skills in that particular area of endeavour, and they are responsible for defining what is 'fit for purpose' for the project. The domain expert provides insights into the problem and suggests ways to address it. They also provide guidance on evaluating and validating the AI system and its outputs. The domain expert is also responsible for communicating with stakeholders and providing feedback on the progress of the project. References:

BCS Foundation Certificate In Artificial Intelligence Study Guide (2019), AI & People, Chapter 12.

https://www.apmg-international.com/en/al-adoption/domain-expert/

Question 11

Question Type: **MultipleChoice**

Which of the following is an advantage of a machine based system?

Options:

A- Able to judge ambiguous and unknown situations.

B- Capable of sympathising with humans.

C- Undertakes monotonous tasks reliably and accurately.

D- Can explain the output of an AI system

Answer:

C

Explanation:

One of the main advantages of a machine-based system is its ability to reliably and accurately undertake monotonous and repetitive tasks. This is especially useful for tasks that require a high level of accuracy and precision, such as data entry or analysis. Machine-based systems are also able to process large amounts of data quickly, meaning that they are able to complete tasks more quickly and efficiently than humans. Additionally, machine-based systems can be programmed to take certain decisions and actions based on the input data, allowing them to automate certain processes without the need for human intervention. References:

BCS Foundation Certificate In Artificial Intelligence Study Guide (2019), AI Systems, Chapter 8.

https://www.apmg-international.com/en/al-adoption/advantages-of-al/

Question 12

Question Type: **MultipleChoice**

The EU's Ethical Guidelines use what to demonstrate trustworthy AI?

Options:

A- A quality assurance plan.

B- UN's sustainability goals.

C- Customer feedback.

D- A human-centric value system.

Answer:

D

Explanation:

The European Union's Ethical Guidelines for Trustworthy AI use a human-centric value system to demonstrate that Artificial Intelligence (AI) is trustworthy. This value system is based on human rights, autonomy, safety, privacy, transparency, accountability and fairness. The guidelines also state that AI should be designed, developed and used in a manner that respects these values. References:

https://ec.europa.eu/digital-single-market/en/news/ethical-guidelines-trustworthy-ai

BCS Foundation Certificate In Artificial Intelligence Study Guide (2019), A.I & Ethics, Chapter 5.

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