Artificial Intelligence Knowledge Challenge

Artificial Intelligence · Answer Key · 25 Questions

1. Which influential 1950 paper by Alan Turing proposed a test for machine intelligence now famously known as the Turing Test?

A) Computing Machinery and Intelligence
B) On Computable Numbers
C) The Imitation Game
D) Artificial Intelligence: A Modern Approach

2. In the context of artificial neural networks, what is the specific mathematical function used to introduce non-linearity into the model?

A) Backpropagation
B) Activation function
C) Gradient descent
D) Softmax

3. Which algorithm did IBM's Deep Blue use to evaluate millions of positions per second during its 1997 victory over Garry Kasparov?

A) Alpha-Beta pruning
B) Monte Carlo Tree Search
C) Q-learning
D) Genetic algorithms

4. What is the name of the 'winter' period in AI research caused by the 1973 Lighthill Report in the UK?

A) The First AI Winter
B) The Second AI Winter
C) The British AI Slump
D) The Symbolic AI Decline

5. Which neural network architecture, introduced by Vaswani et al. in 2017, relies entirely on attention mechanisms to draw global dependencies?

A) Recurrent Neural Network
B) Transformer
C) Long Short-Term Memory
D) Convolutional Neural Network

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6. What term describes the phenomenon where a neural network performs exceptionally well on training data but fails to generalize to new data?

A) Underfitting
B) Overfitting
C) Gradient explosion
D) Vanishing gradient

7. Which pioneer of AI coined the term 'Artificial Intelligence' at the 1956 Dartmouth Workshop?

A) Marvin Minsky
B) John McCarthy
C) Herbert Simon
D) Allen Newell

8. What is the primary purpose of the 'ReLU' (Rectified Linear Unit) in deep learning models?

A) Reducing dimensionality
B) Preventing vanishing gradients
C) Normalization of inputs
D) Loss function calculation

9. In reinforcement learning, what does the 'Bellman Equation' fundamentally describe?

A) Policy gradient optimization
B) Value function decomposition
C) Stochastic gradient descent
D) Backpropagation through time

10. What was the first computer program to play a game of checkers, developed by Arthur Samuel in 1952?

A) Samuel Checkers Program
B) Deep Checkers
C) Chinook
D) AlphaZero

11. Which statistical method for estimating the parameters of a probability distribution is the foundation of many machine learning algorithms?

A) Maximum Likelihood Estimation
B) Bayesian Inference
C) Principal Component Analysis
D) Support Vector Regression

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12. What does the acronym 'GAN' stand for in the context of generative models?

A) Generative Adversarial Network
B) Global Associative Network
C) Generalized Artificial Neural-network
D) Guided Attention Node

13. Which logic programming language, developed in the early 1970s, was primarily used for AI and computational linguistics?

A) LISP
B) Prolog
C) Smalltalk
D) Fortran

14. What is the 'No Free Lunch' theorem in machine learning primarily concerned with?

A) Computational complexity
B) Algorithm performance across all possible problems
C) Data storage limitations
D) Hardware acceleration

15. Which subfield of AI focuses on the extraction of meaning from natural language text?

A) Natural Language Processing
B) Computer Vision
C) Robotics
D) Expert Systems

16. What is the function of the 'Softmax' layer in a classification neural network?

A) To normalize output into a probability distribution
B) To calculate the derivative of the loss
C) To reduce the number of neurons
D) To perform dimensionality reduction

17. In the context of AI, what is the 'Perceptron' invented by Frank Rosenblatt in 1958?

A) A multilayer neural network
B) A binary classifier
C) A reinforcement learning agent
D) A genetic algorithm

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18. What term refers to a type of AI that has achieved intelligence equal to or exceeding that of a human?

A) Narrow AI
B) General AI
C) Superintelligence
D) Symbolic AI

19. Which company acquired DeepMind in 2014, marking a significant milestone in the commercialization of AI research?

A) Microsoft
B) Google
C) Facebook
D) Amazon

20. What is the objective of the 'k-means' algorithm in unsupervised learning?

A) Classification of labeled data
B) Clustering of unlabeled data
C) Regression of continuous variables
D) Dimension reduction

21. Which famous AI project, developed by IBM, won the game show Jeopardy! in 2011?

A) Deep Blue
B) Watson
C) Blue Gene
D) SyNAPSE

22. What is the primary constraint addressed by the 'Dropout' technique during training?

A) Data scarcity
B) Model overfitting
C) High computational cost
D) Convergence speed

23. What does the 'backpropagation' algorithm calculate to update the weights of a neural network?

A) Forward activation
B) Gradient of the loss function
C) Input data variance
D) Learning rate decay

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24. Which mathematical field is essential for understanding the optimization of weights in a neural network?

A) Calculus
B) Topology
C) Number Theory
D) Abstract Algebra

25. What is the 'Curse of Dimensionality' in machine learning?

A) Increased memory usage for neural networks
B) Phenomena that arise when analyzing data in high-dimensional spaces
C) The difficulty of training deep networks
D) The impossibility of perfect model accuracy

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