PRACTICE QUESTIONS

1. What is Artificial Intelligence (AI)?

- A) The science of making intelligent hardware.
- B) The ability of machines to perform tasks requiring physical strength.
- C) The ability of machines to perform tasks that typically require human intelligence.
- D) The development of computer games.

2. What is a theoretical form of AI that aims to perform any intellectual task that a human can?

- A) Artificial Narrow Intelligence (ANI)
- B) Artificial General Intelligence (AGI)
- C) Artificial Simulated Intelligence (ASI)
- D) Deep Learning
- E) Quantum Learning

3. What observation made by Gordon Moore has been a driving force behind AI, specifically our ability to create large neural networks?

- A) Heisenberg's Uncertainty Principle
- B) Murphy's Law
- C) Newton's Third Law
- D) Cole's Law
- E) Moore's Law

4. What is the simplest unsupervised classification algorithm we have seen this semester?

- A) Neural Network
- B) Linear Regression
- C) Decision Tree
- D) K Means Clustering
- E) KNN (Nearest Neighbor)

5. What is the fundamental, most basic, goal of Unsupervised Learning?

- A) To make predictions based on labeled data
- B) To discover previously unknown patterns in data
- C) To replicate human intelligence
- D) To follow explicit programming instructions

6. Which approach is considered a more powerful, but more complicated, form of Unsupervised Learning?

- A) Decision Trees
- B) Linear Regression
- C) Neural Network (as most commonly used)
- D) K Means Clustering

7. Why is interpretability important in machine learning?

- A) It proves / validates Moore's Law.
- B) It allows for faster computation times.
- C) It is only necessary for large datasets.
- D) It reduces the need for data cleaning.
- E) It helps stakeholders understand and trust the model's decisions.

8. Machine learning has three major steps. What is the first step in the machine learning process?

- A) Model Training
- B) Data Collection
- C) Deployment
- D) Model Evaluation
- E) Data Cleaning

9. What differentiates reinforcement learning from unsupervised learning?

- A) The use of labeled data
- B) The absence of data
- C) Learning from interaction with the environment to achieve a goal
- D) The use of neural networks
- E) None of the above. They are the same thing.

10. Why might a machine learning practitioner use LIME?

- A) To make their models run faster
- B) To improve the accuracy of their models directly
- C) To reduce the amount of data needed for training
- D) To explain the predictions of complex models in an interpretable manner
- E) To eliminate bias from the source data

11. What does human bias reflect?

- A) Systematic errors in human thought
- B) Bias in AI data sets
- C) Errors in programming AI applications
- D) Machine errors in AI systems
- E) The natural tendency towards creativity and innovation in humans.

12. What is techno solutionism?

- A) The use of technology to automate all human tasks
- B) A technical solution for bias mitigation
- C) A software solution for managing AI systems
- D) The technological approach to AI development
- E) Belief that technology can solve all problems (often without considering societal implications)

13. What is the Naïve Bayes Classification model known for?

- A) Making good estimations with little information
- B) Being complex and difficult to implement
- C) Requiring a large dataset
- D) Being a type of neural network algorithm
- E) Requiring a balanced dataset for accurate predictions

14. Who developed the foundation of Bayesian probability theory?

- A) Albert Einstein
- B) Reverend Thomas Bayes
- C) Isaac Newton
- D) Roy Fielding
- E) Tim Berners-Lee

15. What do LLMs rely on?

- A) Quantum Computing
- B) Neural Networks
- C) Blockchain Technology
- D) Classic Programming

16. In our Roadmap diagram, what is not listed under Model Training for supervised learning?

- A) Regression
- B) Decision Tree
- C) K-NN (for Recommender Systems)
- D) Quantum Computing
- E) Bayesian Classification

17. What is the purpose of managing bias in Machine Learning?

- A) To increase model accuracy by adding more bias
- B) To ensure fairness and reduce unfair outcomes
- C) To speed up the training process
- D) To make the models fully autonomous
- E) To alleviate all human suffering

18. What is the significance of forward and backward propagation in the context of Neural Networks?

- A) They refer to the transfer of data through the network
- B) They are methods used for training the network by adjusting weights based on statistical error
- C) They describe the encryption and decryption processes
- D) They are used for data collection and cleaning processes
- E) They are used to determine the optimal number of layers in the network.

19. What is a common reason for Generative AI hallucinations?

- A) Lack of training data
- B) Data Quality
- C) Excessive user input
- D) Hardware limitations
- E) Overheated circuits

20. Which level does not classify as a Generative AI hallucination?

- A) Factual Contradictions
- B) User Dissatisfaction
- C) Prompt Contradiction
- D) Sentence Level Inconsistency

21. What makes the LLaMA 2 70B model notable compared to other LLMs?

- A) Its parameters and architecture are open to the public.
- B) It is the only LLM available.
- C) It can only be used offline.
- D) It is the smallest LLM ever built.

22. What is the data type used for the parameters in the LLaMA 2 70B model, leading to its file size?

- A) Integer
- B) Float 16
- C) Float 32
- D) String

23. How much data is roughly used for training the LLaMA 2 70B model?

- A) 100 gigabytes
- B) 10 terabytes
- C) 1 terabyte
- D) 100 terabytes

24. What technique can be used to improve an LLM's performance on specific tasks?

- A) Turning it off and on again
- B) Fine-tuning with targeted datasets
- C) Increasing internet bandwidth
- D) Replacing the GPU
- E) Allocating more memory to each individual weight

25. What do 'scaling laws' refer to in the context of LLMs?

- A) Laws regulating the use of LLMs
- B) The relationship between the size of an LLM and its accuracy and performance
- C) The legal implications of deploying LLMs globally
- D) Environmental impacts of scaling up LLM infrastructure