

Name: _____ Date: _____

Answer Key: Total Recall: Can You Outsmart the AI in 5th Grade?

Examine how training data shapes digital brains before you launch into a future where humans and algorithms work side-by-side.

1. An environmental scientist uses AI to track endangered snow leopards. If the AI was only trained on photos of leopards in the daytime, what will likely happen when it sees a night-vision photo?

Answer: B) It might fail to recognize the leopard because its training data was biased toward daylight.

Machine learning relies on training data; if the data is incomplete or biased (only daytime), the AI cannot accurately evaluate scenarios it hasn't 'seen' before.

2. A team of engineers is building a robot to sort recycling. Instead of coding every rule, they show the robot 10,000 photos of plastic bottles. This process of learning from patterns is called ____.

Answer: C) Machine Learning

Machine learning is a subset of AI where the system improves its performance on a specific task by identifying patterns in data rather than following strict, manually written instructions.

3. True or False: A neural network is a physical piece of hardware made of biological brain cells that is inserted into a computer.

Answer: B) False

Neural networks are digital models inspired by the structure of the human brain, but they are made of software code and math, not actual biological cells.

4. Imagine an AI designed to predict which books a student will enjoy. To evaluate if the AI is working correctly, what should the designers check?

Answer: D) The accuracy of suggestions compared to the student's actual favorites.

Evaluating AI involves testing its accuracy and effectiveness against real-world outcomes to ensure the algorithm's predictions match reality.

5. True or False: If an AI algorithm is used to decide who wins a creative writing contest, it might be 'biased' if it was only trained on stories written by professional adults.

Answer: A) True

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AI bias occurs when the training data doesn't represent the diverse group it is evaluating, leading to unfair results (like penalizing a child's unique writing style).

6. When an AI for a smart-farm must decide between watering a thirsty crop or saving water during a drought, it is using a process called _____.

Answer: B) Automated Reasoning

Reasoning in AI allows the system to weigh different factors and data points to make a logical decision toward a specific goal.

7. A 'Black Box' in AI refers to a situation where even the programmers don't fully understand exactly how a complex model reached its specific conclusion. Why is this a challenge?

Answer: C) Because it is difficult to ensure the AI's decision was fair or ethical.

The 'Black Box' problem is a major ethical concern in CS because transparency is needed to ensure AI isn't making decisions based on secret, unfair patterns.

8. To help an AI identify different types of trees in a forest, a scientist provides a 'Dataset.' In this scenario, the Dataset is used as the _____ for the AI.

Answer: C) Training Material

A dataset is the collection of information (images, text, or numbers) used to train an AI model so it can learn to recognize patterns.

9. How do Neural Networks 'learn' from their mistakes during training?

Answer: B) They adjust the 'weights' or importance of different connections in their software.

Neural networks use mathematical optimization to adjust the strength (weights) of internal connections when they get an answer wrong, narrowing the gap between error and accuracy.

10. True or False: If you want an AI to be 'Creative,' it must first analyze thousands of examples of human work to understand the structure of art or music.

Answer: A) True

Generative AI doesn't have a 'spark' of imagination; it produces 'new' content by recombining patterns it learned from a massive library of human-created data.