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Exam : RAI

Title : Risk and AI (RAI)

Version : DEMO

1.A problem-solving AI model is being developed to solve the Tower of Hanoi puzzle by systematically planning moves to achieve the final goal. The model needs to evaluate intermediate steps to clear disks strategically for future moves.

Which approach would best help the model to complete this task?

- A. Tactical lookahead, as it considers each immediate move without long-term planning.
- B. Strategic planning, by identifying intermediate moves that contribute to the end goal.
- C. Reinforcement learning, by rewarding moves that lead to progress in the puzzle.
- D. Randomized search, by exploring different moves without a predefined plan.

Answer: B

Explanation:

Correct (B): Strategic planning is effective here as it enables the model to identify necessary intermediate steps that contribute to the overall task completion.

Incorrect (A): Tactical lookahead focuses on immediate moves, but lacks the broader, goal-oriented strategy required for solving this puzzle.

Incorrect (C): Reinforcement learning, while useful for trial-and-error scenarios, is less efficient for puzzles where specific sequences are needed for completion.

Incorrect (D): Randomized search lacks the systematic approach necessary for achieving the goal in a structured puzzle like Tower of Hanoi.

2.A checkers AI program evaluates possible board positions using six criteria, each with a calculated score (c1 to c6) and corresponding weight (w1 to w6).

Which formula will provide the overall score v for a given board position?

- A. $v = w1 + w2 + w3 + w4 + w5 + w6$
- B. $v = c1 + c2 + c3 + c4 + c5 + c6$
- C. $v = (w1 \times c1) + (w2 \times c2) + (w3 \times c3) + (w4 \times c4) + (w5 \times c5) + (w6 \times c6)$
- D. $v = (c1 + c2 + c3 + c4 + c5 + c6) / 6$

Answer: C

Explanation:

Correct (C): $v = (w1 \times c1) + (w2 \times c2) + (w3 \times c3) + (w4 \times c4) + (w5 \times c5) + (w6 \times c6)$ accurately combines the weighted values of each criterion to give an overall score for the board position.

Incorrect (A): Adding weights alone does not account for the specific values of each criterion.

Incorrect (B): Summing criteria values without weights ignores the relative importance of each factor.

Incorrect (D): Averaging criteria values disregards individual weights, which are essential for accurate position assessment.

3.Which early concept in neural network theory proposed that repeated activation of one neuron by another would strengthen their connection?

- A. McCulloch-Pitts logical calculus.
- B. Hebbian learning.
- C. Turing computability.
- D. Perceptron learning.

Answer: B

Explanation:

Correct (B): Hebbian learning is based on the idea that repeated activation between neurons strengthens

their connection, forming the basis of associative learning in neural networks.

Incorrect (A): McCulloch- Pitts focused on propositional logic to model neuron behavior, not the strengthening of neuron connections.

Incorrect (C): Turing computability defines the limits of what can be computed, not neuron connection strengthening.

Incorrect (D): The Perceptron was a model developed by Rosenblatt, based on probability theory rather than neuron connection strengthening.

4. Why is inscrutability particularly challenging in deep learning models compared to classical AI models?

A. Deep learning models lack structured, rule-based programming which makes their internal processes complex and opaque.

B. Deep learning models are designed with symbolic logic, making them difficult to understand.

C. Inscrutability arises in deep learning because these models rely on a small number of layers and connections, simplifying decision paths.

D. Deep learning models explicitly depend on human-engineered rules, limiting transparency in decision-making.

Answer: A

Explanation:

Correct (A): Deep learning models are not rule-based but rely on learned representations through multiple layers, making their decision-making processes complex and opaque.

Incorrect (B): Deep learning models do not use symbolic logic; they rely on pattern recognition.

Incorrect (C): Deep learning models typically have multiple layers, adding to their complexity.

Incorrect (D): Deep learning models learn from data patterns, not human-engineered rules.

5. What is a key limitation of using ChatGPT for code generation in complex programming tasks?

A. ChatGPT rigorously analyzes each line of code it generates, ensuring accuracy.

B. ChatGPT relies on historical patterns in programming data, which may not account for novel or nuanced requirements.

C. ChatGPT consistently produces optimal code solutions for all programming needs.

D. ChatGPT is limited to providing syntactically incorrect code.

Answer: B

Explanation:

Correct (B): ChatGPT generates code based on patterns in training data, which can lead to plausible but potentially incorrect solutions in unique or nuanced cases.

Incorrect (A): ChatGPT does not rigorously analyze each line; it follows patterns.

Incorrect (C): ChatGPT may produce non-optimal or incorrect solutions if the task is unusual.

Incorrect (D): ChatGPT can produce syntactically correct code, but correctness is not guaranteed.