

Artificial Intelligence Algorithms Interview Questions And Answers Guide.



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Artificial Intelligence Algorithms Job Interview Preparation Guide.

Question # 1

What is a cybernetics in artificial intelligence algorithms?

Answer:-

A cybernetics is the study of communication between human and machine.

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Question # 2

What is the goal of artificial intelligence algorithms?

Answer:-

The scientific goal of artificial intelligence is to explain various sorts of intelligence.

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Question # 3

When does an algorithm complete?

Answer:-

An Algorithm is complete if It terminates with a solution when one exists.

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Question # 4

Which is true regarding BFS in artificial intelligence algorithms?

Answer:-

Regarding BFS, the entire tree so far been generated must be stored in BFS.

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Question # 5

What is a heuristic function in artificial intelligence algorithms?

Answer:-

Heuristic function is a function that maps from problem state descriptions to measures of desirability.

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Question # 6

The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance what is the length of tour?

Answer:-

The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour, is $O(n!)$.

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Question # 7

When an algorithm A is admissible in artificial intelligence algorithms?

Answer:-

An algorithm A is admissible if It is guaranteed to return an optimal solution when one exists.



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Question # 8

What is idempotency law in artificial intelligence algorithms?

Answer:-

Idempotency Law in artificial intelligence algorithms is $P \vee P = P$.

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Question # 9

What is knowledge in artificial intelligence algorithms?

Answer:-

Knowledge in artificial intelligence algorithms may be declarative and procedural.

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Question # 10

What do we mean by simulated annealing in artificial intelligence?

- a) Returns an optimal solution when there is a proper cooling schedule
- b) Returns an optimal solution when there is no proper cooling schedule
- c) It will not return an optimal solution when there is a proper cooling schedule
- d) None of the mentioned

Answer:-

- a) Returns an optimal solution when there is a proper cooling schedule.

Explanation:

Refer to the definitions of annealing search

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Question # 11

Which of the following algorithm is generally used CSP search algorithm?

- a) Breadth-first search algorithm
- b) Depth-first search algorithm
- c) Hill-climbing search algorithm
- d) None of the mentioned

Answer:-

- b) Depth-first search algorithm

Explanation:

Provides backtrack facility.

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Question # 12

When do we call the states are safely explored?

- a) A goal state is unreachable from any state
- b) A goal state is denied access
- c) A goal state is reachable from every state
- d) None of the mentioned

Answer:-

- c) A goal state is reachable from every state

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Question # 13

How many the new states are generated in backtracking algorithm?

- a) 1
- b) 2
- c) 3
- d) 4

Answer:-

- a) 1

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Question # 14

Which search algorithm will use limited amount of memory?

- a) RBFS
- b) SMA*
- c) Hill-climbing search algorithm
- d) Both a & b

Answer:-

- d) Both a & b



Explanation:

RBFE and SMA* will solve any kind of problem that A* can't by using limited amount of memory.

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Question # 15

Constraint propagation technique actually modifies the CSP problem.

- a) True
- b) False

Answer:-

- a) True

Explanation:

Constraints are propagated towards goal node, modifying actual problem.

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Question # 16

Backtracking is based on:

- a) Last in first out
- b) First in first out
- c) Recursion
- d) Both a & c

Answer:-

- d) Both a & c

Explanation:

Recursion uses LIFO.

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Question # 17

Which search agent operates by interleaving computation and action?

- a) Offline search
- b) Online search
- c) Breadth-first search
- d) Depth-first search

Answer:-

- b) Online search

Explanation:

In online search, it will first take an action and then observes the environment.

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Question # 18

Language/Languages used for programming Constraint Programming includes:

- a) Prolog
- b) C++
- c) C
- d) Fortran

Answer:-

- a) & b)

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Question # 19

The _____ is a touring problem in which each city must be visited exactly once. The aim is to find the shortest tour.

- a) Finding shortest path between a source and a destination
- b) Travelling Salesman problem
- c) Map coloring problem
- d) Depth first search traversal on a given map represented as a graph

Answer:-

- b) Travelling Salesman problem

Explanation:

Refer the TSP problem.

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Question # 20

A problem solving approach works well for:

- a) 8-Puzzle problem
- b) 8-queen problem
- c) Finding an optimal path from a given source to a destination
- d) Mars Hover (Robot Navigation)

Answer:-

- d) Mars Hover (Robot Navigation)

Explanation:



Problem-solving approach works well for toy problems and real-world problems.

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Question # 21

A solution to a problem is a path from the initial state to a goal state. Solution quality is measured by the path cost function, and an optimal solution has the highest path cost among all solutions. State whether true or false.

- a) True
- b) False

Answer:-

- a) True

Explanation:

A solution to a problem is a path from the initial state to a goal state. Solution quality is measured by the path cost function, and an optimal solution has the lowest path cost among all solutions.

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Question # 22

The set of actions for a problem in a state space is formulated by a _____.

- a) Intermediate states
- b) Initial state
- c) Successor function, which takes current action and returns next immediate state
- d) None of the mentioned

Answer:-

- c) Successor function, which takes current action and returns next immediate state

Explanation:

The most common formulation for actions uses a successor function. Given a particular state x , SUCCESSOR-FN(x) returns a set of (action, successor) ordered pairs, where each action is one of the legal actions in state x and each successor is a state that can be reached from x by applying the action.

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Question # 23

A problem in a search space is defined by:

- a) Initial state
- b) Goal test
- c) Intermediate states
- d) All of the above

Answer:-

- a) Initial state & b) Goal test

Explanation:

A problem has four components initial state, goal test, set of actions, path cost.

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Question # 24

A search algorithm takes _____ as an input and returns _____ as an output.

- a) Input, output
- b) Problem, solution
- c) Solution, problem
- d) Parameters, sequence of actions

Answer:-

- b) Problem, solution

Explanation:

A search algorithm takes input as a problem and returns a solution to the problem as an output.

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Question # 25

The problem-solving agent with several immediate options of unknown value can decide what to do by just examining different possible sequences of actions that lead to states of known value and then choosing the best sequence. This process of looking for such a sequence is called Search. State True or False:

- a) True
- b) False

Answer:-

- a) True

Explanation:

Refer to the definition of problem-solving agent.

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Question # 26

What is state space?

- a) The whole problem
- b) Your Definition to a problem
- c) Problem you design
- d) Representing your problem with variable and parameter
- e) A space where you know the solution



Answer:-

d) Representing your problem with variable and parameter

Explanation:

Because state space is mostly concerned with a problem, when you try to solve a problem, we have to design a mathematical structure to the problem, which can only be through variables and parameters. for example, you have given a 4-gallon jug and another 3-gallon jug. Neither has measuring marker on it. You have to fill the jugs with water. How can you get exactly 2 gallons of water in to 4 gallons. Here the state space can be defined as set of ordered pairs integers(x,y), such that $x=0,1,2,3$ or 4 and $y=0,1,2$ or 3; X represents the number of gallons in 4 gallons jug and y represents quantity of water in the 3 gallons jug.

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Question # 27

This set of Artificial Intelligence MCQ focuses on "Problem Solving Approach - 1":

1. The main task of a problem-solving agent is

- a) Solve the given problem and reach to goal
- b) To find out which sequence of action will get it to the goal state
- c) Both a) and b)
- d) Neither a) nor b)

Answer:-

c) Both a) and b)

Explanation:

The problem-solving agents are one of the goal-based agents.

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Question # 28

Which approach is to pretend that a pure divide and conquer algorithm will work?

- a) Goal independence
- b) Sub-goal independence
- c) Both a & b
- d) None of the mentioned

Answer:-

b) Sub-goal independence

Explanation:

Sub-goal independence approach is to pretend that a pure divide and conquer algorithm will work for admissible heuristics.

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Question # 29

What will happen if a predecessor description is generated that is satisfied by the initial state of the planning problem?

- a) Success
- b) Error
- c) Compilation
- d) Termination

Answer:-

d) Termination

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Question # 30

What is meant by consistent in state-space search?

- a) Change in the desired literals
- b) Not any change in the literals
- c) No change in goal state
- d) None of the mentioned

Answer:-

b) Not any change in the literals

Explanation:

Consistent means that the completed actions will not undo any desired literals.

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Question # 31

What is the other name of backward state-space search?

- a) Regression planning
- b) Progression planning
- c) State planning
- d) Test planning

Answer:-

a) Regression planning

Explanation:

Backward state-space search will find the solution from goal to the action, so it is called as Regression planning.

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Question # 32



What is the main advantage of backward state-space search?

- a) Cost
- b) Actions
- c) Relevant actions
- d) All of the mentioned

Answer:-

- c) Relevant actions

Explanation:

The main advantage of backward search will allows us to consider only relevant actions.

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Question # 33

How many states are available in state-space search?

- a) 1
- b) 2
- c) 3
- d) 4

Answer:-

- d) 4

Explanation:

There are four states available in state-space search. They are initial state, actions, goal test and step cost.

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Question # 34

What is the other name for forward state-space search?

- a) Progression planning
- b) Regression planning
- c) Test planning
- d) None of the mentioned

Answer:-

- a) Progression planning

Explanation:

It is sometimes called as progression planning, because it moves in the forward direction.

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Question # 35

How many ways are available to solve the state-space search?

- a) 1
- b) 2
- c) 3
- d) 4

Answer:-

- b) 2

Explanation:

There are two ways available to solve the state-space search. They are forward from the initial state and backward from the goal.

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Question # 36

What are taken into account of state-space search?

- a) Post conditions
- b) Preconditions
- c) Effects
- d) Both b & c

Answer:-

- d) Both b & c

Explanation:

The state-space search takes both precondition and effects into account for solving a problem.

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Question # 37

Which is the most straightforward approach for planning algorithm?

- a) Best-first search
- b) State-space search
- c) Depth-first search
- d) Hill-climbing search

Answer:-

- b) State-space search

Explanation:

The straightforward approach for planning algorithm is state space search because it takes into account of everything for finding a solution.



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Question # 38

What will happen if a predecessor description is generated that is satisfied by the initial state of the planning problem?

- a) Success
- b) Error
- c) Compilation
- d) Termination

Answer:-

- d) Termination

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Question # 39

Tell me what is meant by consistent in state-space search?

- a) Change in the desired literals
- b) Not any change in the literals
- c) No change in goal state
- d) None of the mentioned

Answer:-

- b) Not any change in the literals

Explanation:

Consistent means that the completed actions will not undo any desired literals.

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Question # 40

The process of removing detail from a given state representation is called _____.

- a) Extraction
- b) Abstraction
- c) Information Retrieval
- d) Mining of data

Answer:-

- b) Abstraction

Explanation:

The process of removing detail from a representation is called abstraction.

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Question # 41

Which approach is to pretend that a pure divide and conquer algorithm will work?

- a) Goal independence
- b) Sub-goal independence
- c) Both a & b
- d) None of the mentioned

Answer:-

- b) Sub-goal independence

Explanation:

Sub-goal independence approach is to pretend that a pure divide and conquer algorithm will work for admissible heuristics.

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Question # 42

Flexible CSPs relax on:

- a) Constraints
- b) Current State
- c) Initial State
- d) Goal State

Answer:-

- a) Constraints

Explanation:

Definition of flexible CSPs.

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Question # 43

How many states are present in parsing?

- a) 1
- b) 2
- c) 3
- d) 4

Answer:-



c) 3

Explanation:

The three state available in parsing are initial state, successor function and goal test.

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Question # 44

How many objects are available in closed classes?

- a) 1
- b) 2
- c) 3
- d) 4

Answer:-

d) 4

Explanation:

The four objects are available in closed classes are pronoun, article, preposition and conjunction.

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Question # 45

Why the parsing is used?

- a) Interpretation
- b) Building a parse tree
- c) Recognition
- d) All of the mentioned

Answer:-

b) Building a parse tree

Explanation:

Parsing is the process of building a parse tree for an input string.

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Question # 46

What is a finite set of rules that specifies a language?

- a) Signs
- b) Communication
- c) Grammar
- d) Phrase

Answer:-

c) Grammar

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Question # 47

What is defined by set of strings?

- a) Signs
- b) Formal language
- c) Communication
- d) None of the mentioned

Answer:-

b) Formal language

Explanation:

A formal language is defined by set of strings that is a concatenation of terminal symbols.

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Question # 48

How many things are present in conventional communication signs?

- a) 3
- b) 4
- c) 5
- d) 6

Answer:-

c) 5

Explanation:

The five things present in the conventional communication system are query, inform, request, acknowledge and promise.

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Question # 49

What is the complex system of structured message?

- a) Languages
- b) Words
- c) Signs
- d) Speech



Answer:-

a) Languages

Explanation:

Language is the complex system of structured message that enables us to communicate.

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Question # 50

What is the intentional exchange of information brought about by production and perception?

a) Hearing

b) Communication

c) Speech

d) None of the mentioned

Answer:-

b) Communication

Explanation:

Communication is the intentional exchange of information brought about by production and perception of signs drawn from a shared system.

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Question # 51

What kind of perception is used in printing?

a) Optical character recognition

b) Speech recognition

c) Perception

d) None of the mentioned

Answer:-

a) Optical character recognition

Explanation:

When perception is used in printing means, It is called as optical character recognition.

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Question # 52

Pick out the correct option about the types of parsing:

a) Top-down and bottom-up parsing

b) Interpretation and communication

c) Roll-up and roll-down

d) None of the mentioned

Answer:-

a) Top-down and bottom-up parsing

Explanation:

The two types of parsing are top-down parsing and bottom-up parsing.

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Question # 53

What is Naive Bayes Algorithm?

Answer:-

The Microsoft Naive Bayes algorithm is a classification algorithm provided by Microsoft SQL Server Analysis Services for use in predictive modeling. The name Naive Bayes derives from the fact that the algorithm uses Bayes theorem but does not take into account dependencies that may exist, and therefore its assumptions are said to be naive.

This algorithm is less computationally intense than other Microsoft algorithms, and therefore is useful for quickly generating mining models to discover relationships between input columns and predictable columns. You can use this algorithm to do initial explorations of data, and then later you can apply the results to create additional mining models with other algorithms that are more computationally intense and more accurate.

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Question # 54

What is Back propagation in Neural Networks?

Answer:-

A back-propagation neural network is only practical in certain situations. Following are some guidelines on when you should use another approach:

Can you write down a flow chart or a formula that accurately describes the problem? If so, then stick with a traditional programming method.

Is there a simple piece of hardware or software that



already does what you want? If so, then the development time for a NN might not be worth it.

Do you want the functionality to "evolve" in a direction that is not pre-defined? If so, then consider using a Genetic Algorithm (that's another topic!).

Do you have an easy way to generate a significant number of input/output examples of the desired behavior? If not, then you won't be able to train your NN to do anything.

Is the problem is very "discrete"? Can the correct answer can be found in a look-up table of reasonable size? A look-up table is much simpler and more accurate.

Are precise numeric output values required? NN's are not good at giving precise numeric answers.

Conversely, here are some situations where a BP NN might be a good idea:

A large amount of input/output data is available, but you're not sure how to relate it to the output.

The problem appears to have overwhelming complexity, but there is clearly a solution.

It is easy to create a number of examples of the correct behavior.

The solution to the problem may change over time, within the bounds of the given input and output parameters (i.e., today $2+2=4$, but in the future we may find that $2+2=3.8$). Outputs can be "fuzzy", or non-numeric.

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Question # 55

what is software cycle? Give a diagrammatic representation?

Answer:-

Explain what is software cycle

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Question # 56

List the types of linked list with aid of diagram?

Answer:-

List down the types of linked list with aid of diagram yourself

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Question # 57

What are the minimum requirements for statr testing?

Answer:-

Explain minimum requirements for statr testing

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