Review

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Solving problems by searching

1. Problem-Solving Agents
    1.1 Well-defined problems and solutions
    1.2 Formulating problems
2. Example problems
    2.1 Toy problems
    2.2 Real-world problems

Fifth week learning tasks

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Solving problems by searching

3. Searching for Solutions
   - Shortest Path Problem by Tree Search
   - Shortest Path Problem by Graph Search
4. Uninformed Search Strategies
   - Breadth-first Search
   - Uniform-cost Search
   - Depth-first Search→ ○ Depth-limited Search
     ○ Iterative Deepening Depth-first Search
   - Bidirectional Search

EXERCISES

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3.10 Define in your own words the following terms: state, state space, search tree, search node, goal, action, transition model, and branching factor.

3.15 Which of the following are true and which are false? Explain your answers.

a. Depth-first search always expands at least as many nodes as A* search with an admissible heuristic.

b. $h(n) = 0$ is an admissible heuristic for the 8-puzzle.

c. A* is of no use in robotics because percepts, states, and actions are continuous.

d. Breadth-first search is complete even if zero step costs are allowed.

e. Assume that a rook can move on a chessboard any number of squares in a straight line, vertically or horizontally, but cannot jump over other pieces. Manhattan distance is an admissible heuristic for the problem of moving the rook from square A to square B in the smallest number of moves.

Recommended videos

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1. Depth first and breadth first - graph calculation
   (https://www.bilibili.com/video/av53045157/)