



School of Computer Science Engineering & Information Systems

Winter Sem – 2023 - 2024
Exercise Set - 2

Programme : B.Tech (IT)
Course Title : Artificial Intelligence

Course Code: BITE308P

1. Bidirectional search is an algorithm that explores the search space from both the start and goal states simultaneously. It continues expanding nodes until the two searches meet in the middle. Make an implementation of the Greedy Bidirectional Search algorithm in Python.
2. Greedy Best-First Search is an informed search algorithm used in artificial intelligence and graph traversal. Greedy Best-First Search always chooses the node that appears to be the most promising according to a heuristic evaluation. Make an implementation of the Greedy Best-First Search algorithm in Python.
3. A* (A-star) search is an informed search algorithm that combines the benefits of both Dijkstra's algorithm and Greedy Best-First Search. It uses a heuristic function to estimate the cost from the current node to the goal and combines this estimate with the actual cost from the start node to the current node. The priority queue is maintained based on the sum of these costs. Make an implementation of the A* Search algorithm in Python.
4. The Traveling Salesman Problem (TSP) is often solved using informed search algorithms with a suitable heuristic. Make an implementation of the TSP using A* search in Python.



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5. Minimax is a decision-making algorithm used in two-player games. It's often used in games like tic-tac-toe, chess, or checkers. The algorithm evaluates each possible move at a given depth and selects the move that minimizes the maximum possible loss. Make an implementation of the Minimax algorithm in Python.

6. Alpha-beta pruning is an optimization technique for the Minimax algorithm. It reduces the number of nodes evaluated in the search tree by eliminating branches that cannot affect the final decision. Make an implementation of the Minimax algorithm with alpha-beta pruning in Python: