

Indian Institute of Engineering Science & Technology

Department of Computer Science & Technology

Artificial Intelligence Laboratory

Assignment 3

Implement the following State-Space Search Algorithms in a production system model (as far as possible):

- 1) Depth First Search.
- 2) Breadth First Search.
- 3) Iterative Deepening Search.
- 4) Hill Climbing Search.
- 5) Best First Search.
- 6) A* Algorithm Search.

The State-Space Search Algorithms should be used to solve 8-Puzzle problem. For example, a pair of possible inputs for the problem are as shown below:

Initial State			Goal State		
2	8	3	1	2	3
1	6	4	8	–	4
7	–	5	7	6	5

The outputs are the path from the initial state to goal state and total number of comparisons of current states and the goal state.

For A* Algorithm compare the path and number of comparisons using the heuristics:

- a) Number of tiles mismatching between current state and goal state.
- b) Manhattan distance between current state and goal state.