Assignment Name:8 puzzle problem solve using Heuristic functions

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***Abstract*—This paper introduced for solving 8-puzzle problem using Heuristic functions.**

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***Index Terms*—8-puzzle, heuristic function,Anaconda Prompt(anaconda3)**

I. Introduction

The 8-puzzle problem is a puzzle invented and popularized by Noyes Palmer Chapman in the 1870s. It is played on a 3-by-3 grid with 8 square blocks labeled 1 through 8 and a blank square. Your goal is to rearrange the blocks so that they are in order. You are permitted to slide blocks horizontally or vertically into the blank square. The following shows a sequence of legal moves from an initial board position (left) to the goal position (right).

II. Literature Review

In 2012 Farhad S. et. al. [4] proposed new resolution for solving N-queens by using combination of DFS (Depth First Search) and BFS (Breadth First Search) techniques. The proposed algorithm act based on placing queens on chess board directly. The results report the performance and run time of this approach.

III. Proposed Methodology

The heuristic function h(N) 0 estimates the cost to go from STATE(N) to a goal state.

A puzzle:current state [[1, 2, 4], [3, 0, 6], [7, 8, 5]] goal state: [[1, 2, 3], [4, 5, 6], [7, 8, 0]]

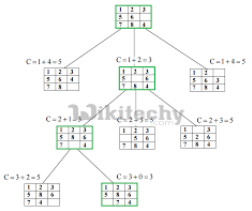

Fig. 1. Example of a figure caption.

IV. Rules for solving the puzzle

Instead of moving the tiles in the empty space we can visualize moving the empty space in place of the tile, basically swapping the tile with the empty space. The empty space can only move in four directions viz.,

1. Up
2.Down
3. Right or
4. Left

The empty space cannot move diagonally and can take only one step at a time (i.e. move the empty space one position at a time).

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References

[1] Piltaver, R., Luštrek, M., / Gams, M. (2012). The pathology of heuristic search in the 8-puzzle. Journal of Experimental Theoretical Artificial Intelligence, 24(1), 65-94.