Report for Programming Assignment 2 (Fifteen Puzzle)

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Abstract

This will be finished after we have the results.

1 Introduction

In this paper, we examine the performance of two search algorithms, Compassion A* and RBFS, using a 4x4 puzzle as a representation. The environment is randomized to ensure optimal exploration. To enhance efficiency, we introduce a random algorithm designed to avoid repeating the same steps.

2 Environment Descriptions

2.1 A* search

Algorithm 1 Programmatic Description of Simple Reflex Agent

1: **for** timestep t until termination **do**
2:     **if** on dirty tile **then**
3:         clean tile
4:     **if** not on dirty tile and facing wall **then**
5:         turn clockwise
6:     **if** not facing wall and not on dirty tile **then**
7:         move forward

2.2 RBFS search

??.

Algorithm 2 Programatic Description of Simple Reflex Agent

1: **for** timestep t until termination **do**
2:     **if** on dirty tile **then**
3:         clean tile
4:     random = (random action of agent) //move forward with 85 possibility and turning with 15 possibility
5:     **if** random equal move forward **then**
6:         **if** not facing wall and not on dirty tile **then**
7:             move forward
8:         **else**
9:             turn clockwise or counterclockwise //random with 50:50
10:     **else** random equal move forward
11:         **if** not on dirty tile and facing wall **then**
12:             turn clockwise or counterclockwise //random with 50:50

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3 Experimental setup

4 Results

5 Discussion