

CMSC 170 – MP 1

Results of A* Search:

Group Members:

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1. On “small maze”
 1. Manhattan distance

[illegible]

- ## 2. Straight-line distance

[illegible]

2. On “medium maze”

1. Manhattan Distance

[illegible]

2. Straight-line Distance

[illegible]

- 3. On “big maze”
 - 1. Manhattan Distance

[illegible]

2. Straight Line Distance

```
Path:
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Path cost: 211
Expanded Nodes: 573
Frontier Size: 583
```

- 4. On “open maze”
 - 1. Manhattan Distance

[illegible]

2. Straight Line Distance



Summary of results for Part 1:

The Manhattan Distance heuristic seems to perform better than the Straight Line Distance heuristic in part 1. The algorithm returns the goal path regardless of the heuristic used. More nodes are expanded and added to the open list when using the straight line heuristic.

5. On “small search”

1. Manhattan Distance

```
Path:
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%m.....cbaP.o%
%n%l%j%k%d% %p%
% % %ihgfe... %q%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Path cost: 53
Expanded Nodes: 77
Frontier Size: 90
```

2. Straight Line Distance

```
Path:
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%m.....cbaP.o%
%n%l%j%k%d% %p%
% % %ihgfe... %q%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Path cost: 53
Expanded Nodes: 95
Frontier Size: 106
```

6. On “tricky search”
 1. Manhattan Distance

```
Path:
%g... ..cd%...%
%h%f%e%a%b%...%
%.....P.....%
%mlkji.....%

Path cost: 69
Expanded Nodes: 111
Frontier Size: 121
```

2. Straight Line Distance

```
Path:
%g... ..bd%...%
%h%f%e%a%c%...%
%.....P.....%
%mlkji.....%

Path cost: 69
Expanded Nodes: 120
Frontier Size: 132
```

Summary of results in Part 2

Same as in Part 1, both heuristics deliver the goal path, however the order in which it comes is a bit different. The Manhattan outperforms the Straight Line heuristic in here, as well; more nodes are expanded for the latter heuristic, as well as the number of nodes in the frontier.

Performance and Contribution of Each Member

Michael Loewe Alivio

Debug & Testing - Part 1

Debug & Testing - Part 2

Implementation - Part 1

Refactoring of code into modular headers

Gamaliel Petralba

Implementation - Part 1

Implementation - Part 2

GitHub Repo Maintainer

Documentation

Juan Carlos Roldan

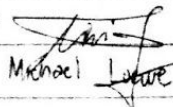
Pseudocode Design


Implementation - Part 1

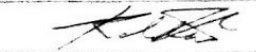
Implementation - Part 2

Documentation

Attested:


Michael Loewe Alivio


Gamaliel Petralba


Juan Carlos Roldan

