**IMPLEMENTATION DETAILS:**

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**TEST CASE 1:**

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 16% |  | 16% | | 14% |
| Nodes visited | 847 |  | 848 | | 751 |
| Nodes processed | 752 |  | 757 | | 686 |
| Max open list size | 97 |  | 97 | | 77 |
| Total processing time | 1.146s |  | 1.097s | | 1.001s |
| Processing time per node | 0.0015s |  | 0.0014s | | 0.0015s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**TEST CASE 2:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 12% |  | 12% | | 9% |
| Nodes visited | 640 |  | 641 | | 481 |
| Nodes processed | 553 |  | 568 | | 445 |
| Max open list size | 89 |  | 88 | | 52 |
| Total processing time | 0.813s |  | 0.830s | | 0.659s |
| Processing time per node | 0.0015s |  | 0.0015s | | 0.0015s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**TEST CASE 3:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 17% |  | 17% | | 13% |
| Nodes visited | 898 |  | 899 | | 717 |
| Nodes processed | 815 |  | 820 | | 674 |
| Max open list size | 88 |  | 89 | | 84 |
| Total processing time | 1.212s |  | 1.220s | | 0.982s |
| Processing time per node | 0.0015s |  | 0.0015s | | 0.0015s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**TEST CASE 4:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 26% |  | 26% | | 12% |
| Nodes visited | 1365 |  | 1366 | | 622 |
| Nodes processed | 1226 |  | 1235 | | 560 |
| Max open list size | 156 |  | 156 | | 72 |
| Total processing time | 1.855s |  | 1.815s | | 0.825s |
| Processing time per node | 0.0015s |  | 0.0015s | | 0.0015s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**TEST CASE 5:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 25% |  | 25% | | 22% |
| Nodes visited | 1357 |  | 1358 | | 1191 |
| Nodes processed | 1187 |  | 1199 | | 1055 |
| Max open list size | 172 |  | 169 | | 144 |
| Total processing time | 1.818 |  | 1.739s | | 1.573s |
| Processing time per node | 0.0015s |  | 0.0015s | | 0.0015s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**TEST CASE 6:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | TRADIOTIONAL A\* (NO TIE BREAKING) | TRADIOTIONAL A\* (WITH TIE BREAKING) | | NODE ARRAY A\* | A\* WITH GOAL BOUNDING |
| Fill | 45% |  | 45% | | 38% |
| Nodes visited | 2382 |  | 2383 | | 2057 |
| Nodes processed | 2231 |  | 2242 | | 1943 |
| Max open list size | 156 |  | 157 | | 130 |
| Total processing time | 3.285 |  | 2.961s | | 2.548s |
| Processing time per node | 0.0015s |  | 0.0013s | | 0.0013s |
| GetBestAndRemove |  |  |  | |  |
| AddToOpen |  |  |  | |  |
| SearchInOpen |  |  |  | |  |
| RemoveFromOpen |  |  |  | |  |
| Replace |  |  |  | |  |
| AddToClosed |  |  |  | |  |
| SearchInClosed |  |  |  | |  |
| RemoveFromClosed |  |  |  | |  |

**ALGORITHM ANALYSIS AND COMPARISON:**

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