

# A\* search algorithm

Evaluation function,  $f(n) = g(n) + h(n)$

$g(n)$  = cost so far to reach  $n$

~~$f(n)$~~   $h(n)$  = estimated cost from  $n$  to goal

$f(n)$  = estimated total cost of path through  $n$  to goal.

So, A\* search takes the ~~past~~ path cost which is already traversed and future path cost to reach goal. So, a node with least  $f(n)$  is selected for expansion.

- Admissible in A\* algorithm
- Consistency in A\* algorithm

Complete: Yes

Time: Exponential

Space: keeps all nodes in memory

Optimal: Yes

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Maze definition =

0	1	0	0	0	0
0	0	0	0	0	0
0	1	0	1	0	0
0	1	0	0	1	0
0	0	0	0	1	0

1 - indicates barrier

0 - indicates a square free to go

Giving a start position, applying  $A^*$  search with  $f(n) = g(n) + h(n)$  leads to destination