



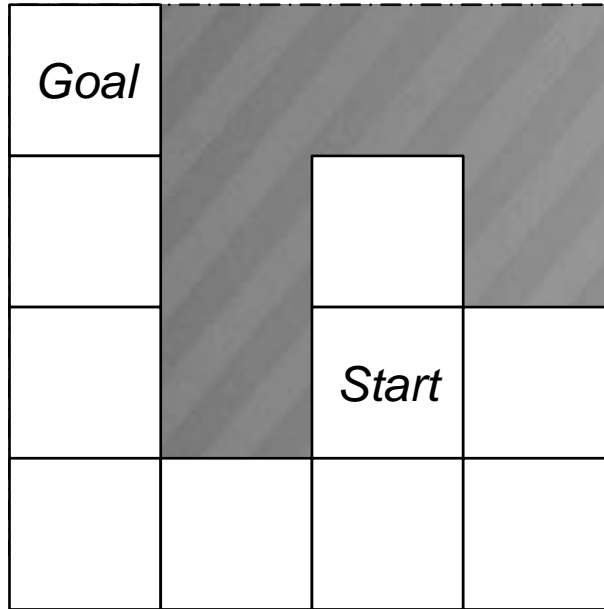
Motion Planning | Graph Search Exercise

Autonomous Mobile Robots

Martin Rufli – IBM Research GmbH

Margarita Chli, Paul Furgale, Marco Hutter, Davide Scaramuzza, Roland Siegwart

Worked Exercise | the A* algorithm



```

0  A_Star(Graph G, Heur H, Node Start, Node Goal)
1    Queue.init(BIN_MIN_HEAP, H)
2    Queue.push(Start)
3    while Queue is not empty:
4        Node curr = Queue.pop()
5        if curr is Goal return
6        Closed.push(curr)
7        Nodes next = expand(curr)
8        for all next not in Closed:
9            Queue.push(next)
  
```

Elements in HEAP

Closed List

Worked Exercise | the A* algorithm

4	Goal $2+2\sqrt{2}$			
3	1 $1+2\sqrt{2}$		$\sqrt{5}$ 1	
2	2 $2\sqrt{2}$		$\sqrt{8}$ Start 0	$\sqrt{13}$ 1
1	3 $1+\sqrt{2}$	$\sqrt{10}$ $\sqrt{2}$	$\sqrt{13}$ 1	$\sqrt{18}$ $\sqrt{2}$
	A	B	C	D

```

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```

Elements in HEAP

~~C2~~ ~~C3~~ D2 D1 C1 ~~B1~~ A1 ~~A2~~ ~~A3~~
 ~~$\sqrt{8}$~~ ~~$1+\sqrt{5}$~~ $1+\sqrt{13}$ $\sqrt{2}+\sqrt{18}$ $1+\sqrt{13}$ $\sqrt{2}+\sqrt{10}$ $4+\sqrt{2}$ ~~$2+2\sqrt{2}$~~ ~~$2+2\sqrt{2}$~~

Closed List

C2 C3 B1 A2 A3