

Your Name

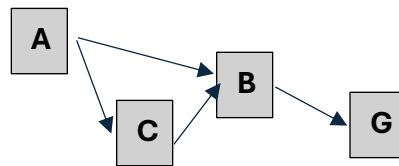
Your UnetID

A* Search and Friends

A* search is a form of UCS where $\text{Cost} = g(n) + h(n)$, where $g(n)$ is the cost traversed from the root n , and $h(n)$ is the estimated cost from n to the goal.

If you set $g(n) = 0$, what type of search do you get?	
If you set $h(n) = 0$, what type of search do you get?	
Suppose $\text{Cost} \approx \text{depth}(n)$ for each arc you traverse, what type of search do you get?	
Can you define an $h(n)$ such that you end up with A* acting like a depth first search? (Hint, what do you need $f(n)$ to look like?)	
Consider your heuristic from the last problem. Is it consistent?	

Consider a graph with the following arcs and costs:



Node	True cost	$h(n)$
A	5	$h(a) = 4$
C	5	$h(c) = 1$
B	1	$h(B) = 1$
G	0	$h(g) = 0$

Arc	Cost
A -> C	1
C -> B	4
A -> B	4

Show that $h(n)$ is admissible (or show counter example)	
Show that $h(n)$ is consistent (or show counter example)	

Heuristics

You want a heuristic to help Pacman eat the last dot on the game board. What heuristic might you use?	
You want a heuristic to help Pacman eat the ALL THE DOTS on the game board. What heuristic might you use?	
You are planning a driving route that minimizes driving time . Is (linear distance*1 mile/hour) an admissible heuristic?	
Can you come up with a better one?	
Is the minimum of two admissible heuristics admissible?	
What about the maximum of two admissible heuristics?	
Which might accelerate your search better?	