Search 3

Wednesday, September 7, 2016 8:56 AM

BFS

Completeness: Yes - search at each depth

optimality: Yes

Time: branching factor - avg # of actions per state
Exponential $O(b^n)$ ← solution depth
(b = branching factor)

Space: → All nodes generated
Kept in memory

DFS

completeness: yes if state space is not infinite
No, if ∞

optimality: No

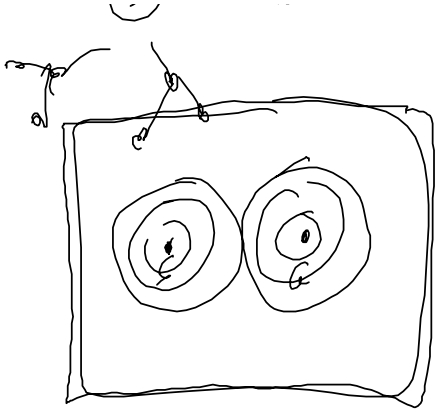
Time: Exponential - Avg. time complexity is lower than BFS
$O(b^m)$ ← max depth of expansions

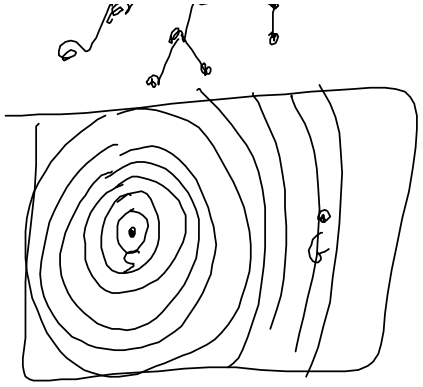
Space: keep all nodes in memory

→ tree-spaces - keep the current branch in memory

Bi-Directional Search

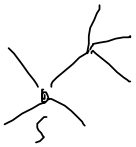
- BFS but expand from init state & goal state

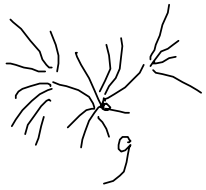




complexity time $O(b^{n/2})$

- branching factor of going backwards is higher than the bf going forwards → bad idea





- have to have a predecessor function

succ

pred