Pacman Project 2
Search

【人工智慧概論】

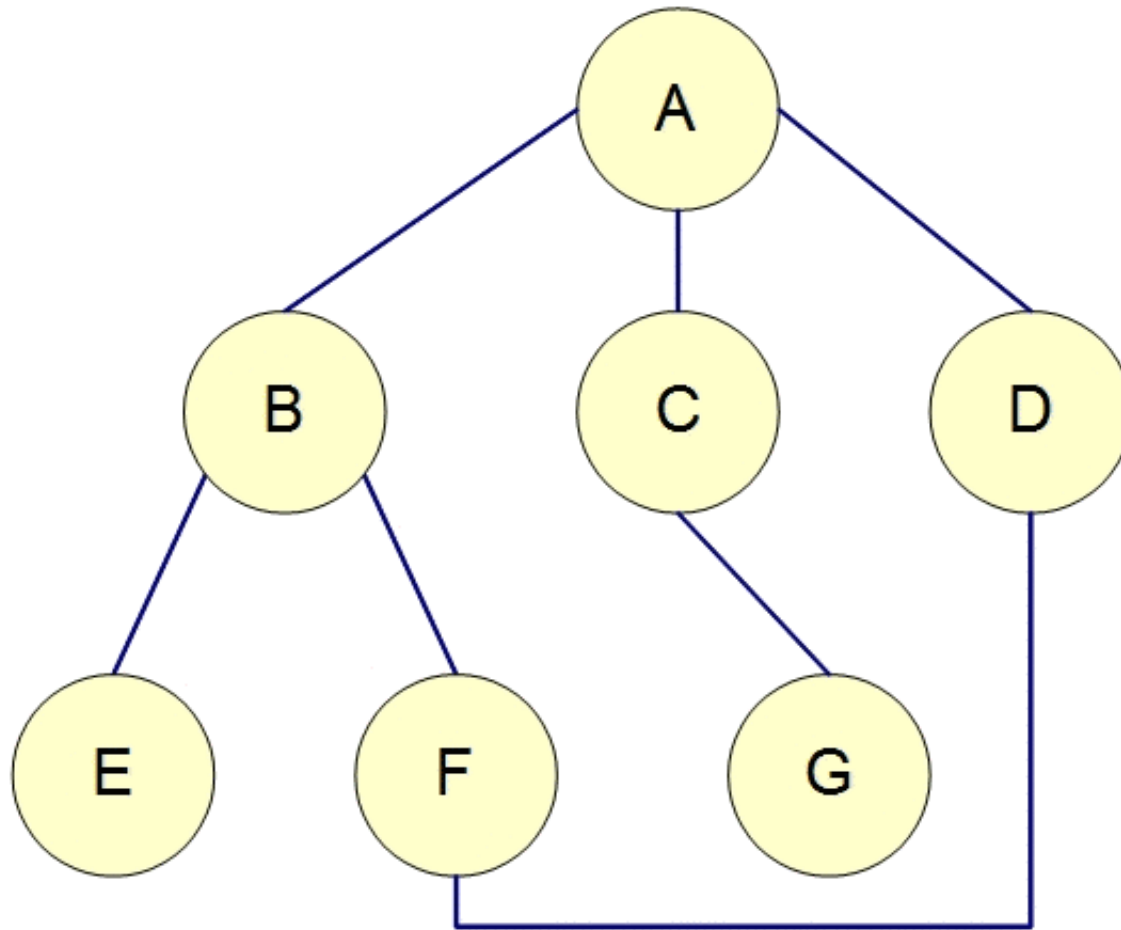授課教師／孫春在

助教／蔣承翰、黃柏皓、呂學昱、
　　　陳沛亘、呂冠霆

日期／2016.03.17

- **Algorithms**
- **Objectives**

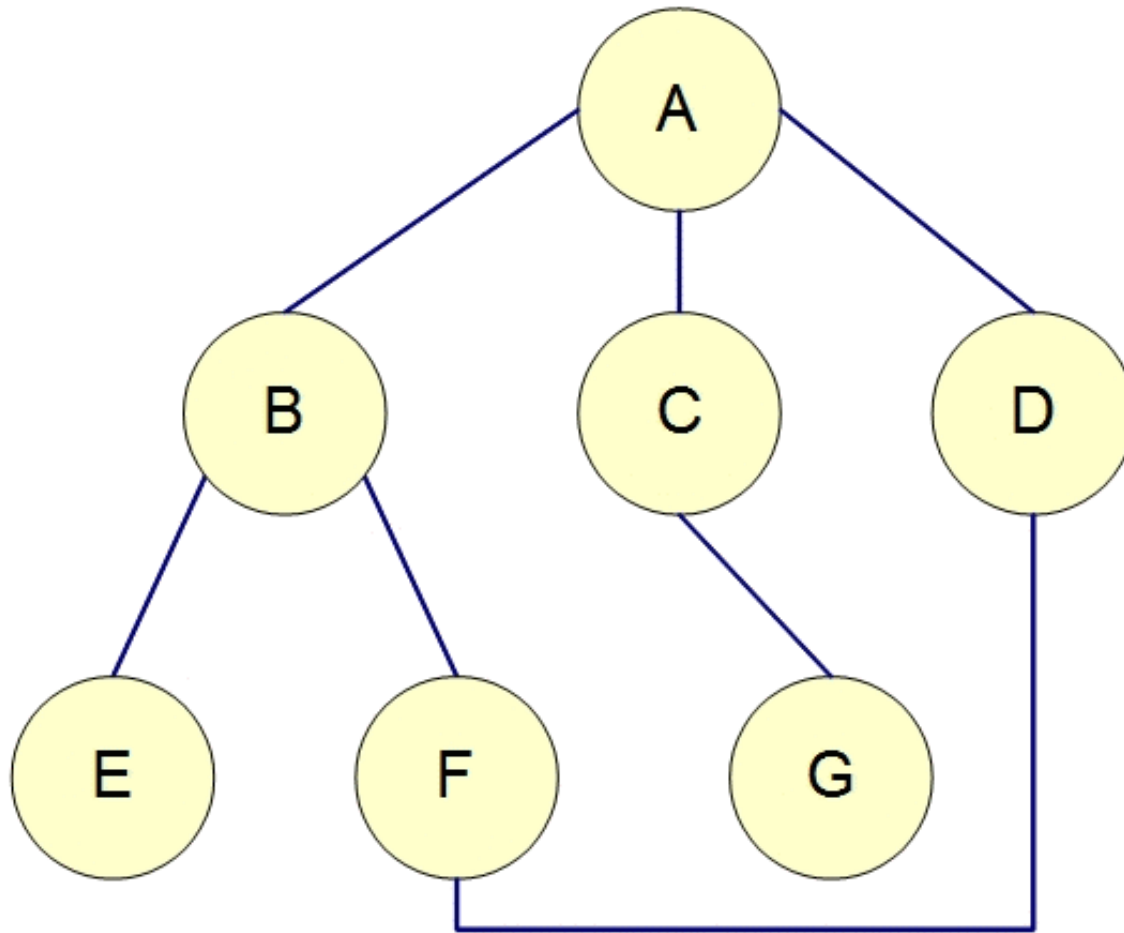# Depth-First Search

(Source)

Breadth-First Search
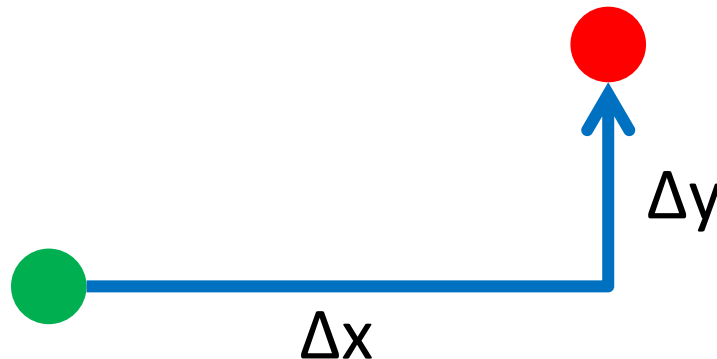

(Source)
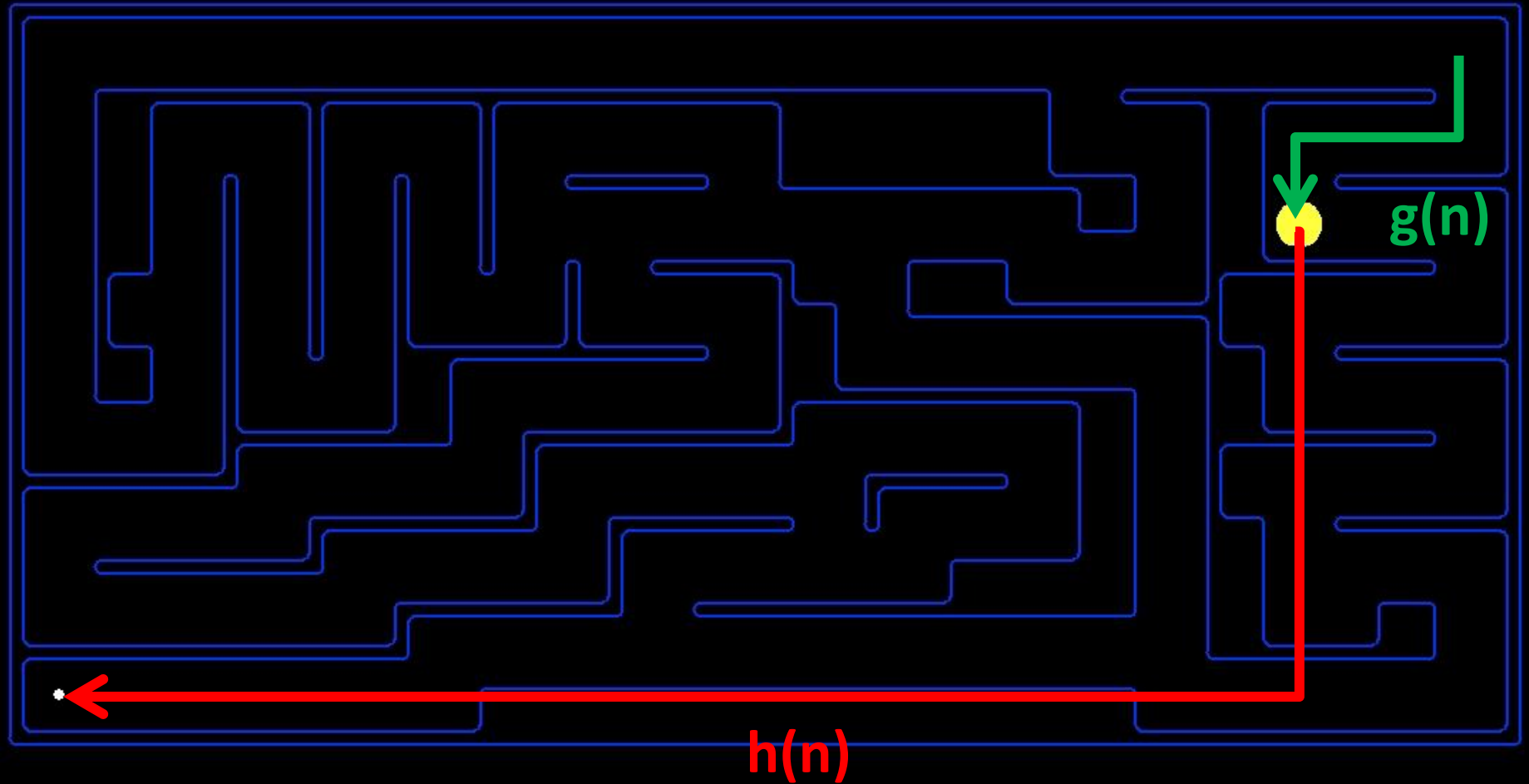
4

A* Search

- **f(n) = g(n) + h(n)**
  - **g(n)**: the cost from the start
  - **h(n)**: heuristic; it estimates the cost to the goal
    - admissible: h(n) ≤ h*(n) (real cost)
    - For Pacman, we use **Manhattan distance**
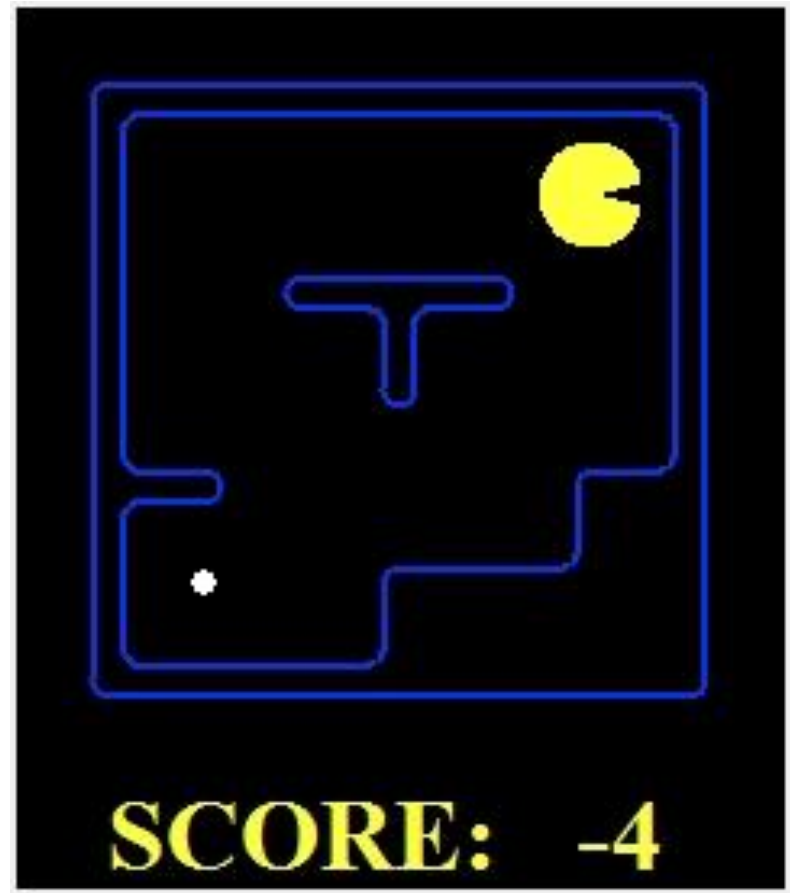
Δy

Δx

A* Search

Objectives

- P2-1 Depth-First Search (35%)
  - -l mediumMaze -p SearchAgent -a fn=dfs

- P2-2 Breadth-First Search (35%)
  - -l mediumMaze -p SearchAgent -a fn=bfs

- P2-3 A* Search (30%)
  - -l mediumMaze -p SearchAgent -a fn=astar,heuristic=manhattanHeuristic

Objectives
Layouts

- tinyMaze

- smallMaze

- mediumMaze

- bigMaze
  - -z 0.5

Autograder

- For debugging your code.
  - P2-1: autograder.py -q q1
  - P2-2: autograder.py -q q2
  - P2-3: autograder.py -q q4

Autograder

- Pass

```
Starting on 3-15 at 22:56:32

Question q1
===========

*** PASS: test_cases\q1\graph_backtrack.test
***        solution:                ['1:A->C', '0:C->G']
***        expanded_states:         ['A', 'D', 'C']
*** PASS: test_cases\q1\graph_bfs_vs_dfs.test
***        solution:                ['2:A->D', '0:D->G']
***        expanded_states:         ['A', 'D']
*** PASS: test_cases\q1\graph_infinite.test
***        solution:                ['0:A->B', '1:B->C', '1:C->G']
***        expanded_states:         ['A', 'B', 'C']
*** PASS: test_cases\q1\graph_manypaths.test
***        solution:                ['2:A->B2', '0:B2->C', '0:C->D', '2:D->E
***        expanded_states:         ['A', 'B2', 'C', 'D', 'E2', 'F']
*** PASS: test_cases\q1\pacman_1.test
***        pacman layout:                    mediumMaze
***        solution length: 130
***        nodes expanded:                   146

### Question q1: 3/3 ###


Finished at 22:56:32

Provisional grades
==================
Question q1: 3/3
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Total: 3/3

Your grades are NOT yet registered.  To register your grades, make sure
to follow your instructor's guidelines to receive credit on your project.
```

Hints

- util.py
  - stack
  - queue

Submit

- Edit and upload search.py to e3
- Search for "[Project 2] YOUR CODE HERE"
- Deadline: 3/31 23:59 (2 weeks)
- Late policy: 80%
- No plagiarism