

Introduction to Artificial Intelligence

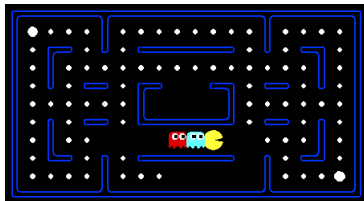
Project 2 – Multi-Agent PacMan

Jianmin Li

Department of Computer Science and Technology
Tsinghua University

Spring, 2018

Multi-Agent PacMan



- Berkeley Multi-Agent Pacman Project
<http://ai.berkeley.edu/multiagent.html>
<https://s3-us-west-2.amazonaws.com/cs188websitecontent/projects/release/multiagent/v1/002/multiagent.zip>

Berkeley Multi-Agent Pacman Project

- Demo

- ▶ `python pacman.py -p ReflexAgent`
- ▶ `python pacman.py -p ReflexAgent -l testClassic`

Basic Tasks (1)

- ReflexAgent

- ▶ Improve the **ReflexAgent** in multiAgents.py
- ▶ `python pacman.py -p ReflexAgent -l openClassic -n 10 -q`
- ▶ **3 points**

- MinimaxAgent

- ▶ Implement **minimax** algorithm
- ▶ In the provided MinimaxAgent class stub in multiAgents.py
- ▶ Any number of ghosts
- ▶ `python pacman.py -p MinimaxAgent -l minimaxClassic -a depth=4`
- ▶ **4 points**

Basic Tasks (2)

- AlphaBetaAgent

- ▶ Implement **alpha-beta** pruning algorithm
- ▶ In the provided AlphaBetaAgent class stub in multiAgents.py
- ▶ `python pacman.py -p AlphaBetaAgent -a depth=3 -l smallClassic`
- ▶ **4 points**

- ExpectimaxAgent

- ▶ Implement the **ExpectimaxAgent**
- ▶ `python pacman.py -p AlphaBetaAgent -l trappedClassic -a depth=3 -q -n 10`
- ▶ `python pacman.py -p ExpectimaxAgent -l trappedClassic -a depth=3 -q -n 10`
- ▶ **4 points**

- Better Evaluation Function

- ▶ Write a better evaluation function for pacman
- ▶ In the provided function `betterEvaluationFunction`
- ▶ `python pacman.py -l smallClassic -p ExpectimaxAgent -a evalFn=better -q -n 10`
- ▶ 1 points

Submission

- A 2-3 pages report (either Chinese or English)
 - ▶ Compare how these agents perform, e.g. state numbers, time, win rate, etc
 - ▶ Discussion
- Zip the files as the following structure
 - ▶ student_id.zip (e.g. 20090112xx.zip)
 - ★ student_id.pdf
 - ★ multiAgents.py

Grading

- Due
 - ▶ 2018/5/1 23:59:59
- Correctness & performance of agents (80%)
 - ▶ Run multiple games for each agent
 - ▶ Grading rules
- Report (20%)