Artificial Intelligence

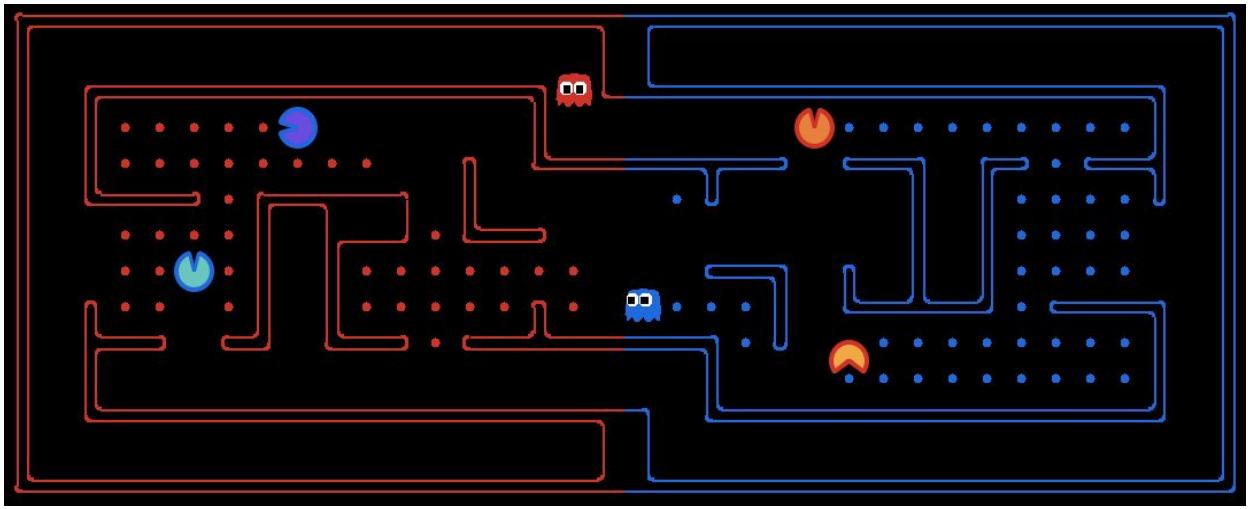
CS4365 --- Spring 2021

Course Project

Overview

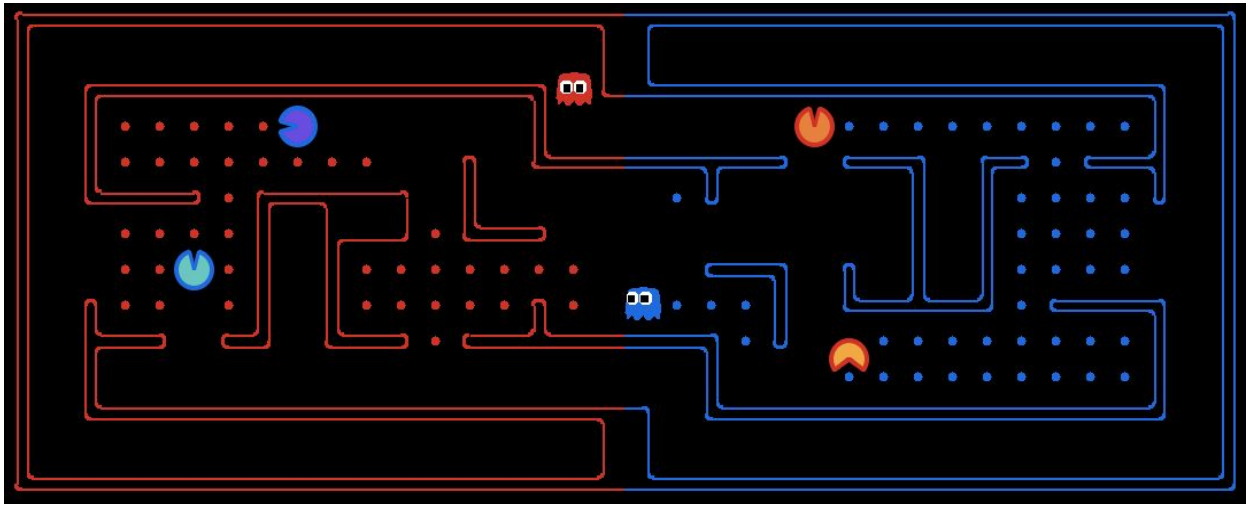
- 12% of course grade
- Spans the rest of the semester: you should start now
- Everyone will work on the same task
  - You may work in a group of two or individually

Task: Pacman CTF



- Goal:
  - Steal all enemy pellets and bring them back to your base!
- Teams:
  - 2 agents. Both can do offense and defense.

How does the game work?



- Two teams per match
- Two agents per team
- Map is divided into two halves, each half corresponds to a team
- To score points, an agent from your team must:
  - Go into enemy territory and steal pellets
  - Make it back alive to your side of the map

How does the game work?

- An agent's location is important!
  - If you are on your side of the map, you are a **ghost**:
    - You can eat enemy agents!
  - If you an on the enemy's side, you are a **pacman:**
    - You can steal pellets, but you are defenseless!

- Roles are not fixed!

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- What about power pellets?
  - While activated, all enemies are turned into pacmans temporarily!

More on Rules…

- If a pacman is eaten while carrying pellets:
  - Its team gains no points.
  - The pacman dies and returns to its starting position.
  - Food pellets are returned to the map.

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- A match ends when:
  - A team steals all but two of the enemy team's food pellets.
  - Each agent does 150 moves

- Whoever has the most points at the end wins!

What you need to do

- Get a team! (2 people maximum)
- Design a team of agents that can beat your peers!
- You may use any techniques at your disposal, both from class and from anywhere else!
- You may not use third party libraries in your submitted code
- Make sure that your agents can return an action in at most 1 second! If your agents take too long, the game will be forfeit!

Set Up

- Python 2 codebase
- Basic APIs to query game information.
  - Note: You have to spend some time looking at the code to understand how to use it.
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- Simple baseline team baselineTeam.py
- myTeam.py file

- You can run games locally

Evaluation

- All submitted teams will play against each other multiple times in randomized maps.
- A ranking will be generated based on overall performance.
- Your grade will be directly proportional to your rank!

What to submit?

- Your agents, in a single .py file:
  - (Optional) Friendly Tournament: 2% extra points.
  - Preliminary Evaluation - 3.5% of course grade
  - Final Evaluation - 7% of course grade
- Final report - 1.5% of course grade

Multiple evaluations so you know where your implementation stands against other teams!

Important Dates

- March 31: Initial release
- April 23: Optional Friendly Tournament (Extra points!)
- April 30: Preliminary Evaluations
- May 12: Final Evaluations
- May 13: Final Report Submission

Important: No late submissions!

Important!

Whenever you submit:

- If your code crashes, you get 0 points.
- If your code times out, you get 0 points (forfeit)
- No computation during the opponent's turn
- No multi-threading (disqualified)
- 10% penalty if:
  - You submit a zip file