Jam Pac’d Presentation

Jeremy Goldberg, Jigar Swaminarayan

Agent Strategies

- At its core, this game just requires our team to score at least 1 point more than the other team
- 1 focused on offense and 1 focused on defense
- Offense is in charge of scoring points
- Defense is in charge of preventing the other team from scoring points
- Bringing back pellets as an offensive agent to score points

- Both agents are implemented with approximate Q-learning in a feature-based representation

Agent Reward Functions

Offensive:

PENALIZE - **dying without food** / moving away from nearest pellet if not holding food / being within 1 of enemy ghost / **moving closer to enemy ghost**

REWARD - **Eating pellets** / moving closer to home if holding pellets / **depositing pellets**

Defensive:

PENALIZE - None

REWARD - Moving closer to an invader / **killing an invader** / moving closer to a far away pellet

Agent Features

Offensive:

- Distance to closest food
- Distance to closest ghost
- Desire for home = f(# of pellets held, distance to “home”)

Defensive:

- Distance to furthest food (on our side)
- Distance to Invader

Training + Fine-Tuning

Trained the agent for 10 games

We adjusted the reward values to focus on prioritizing the features that would lead to an eventual win

We added other “sub-features” such as a binary feature for if an agent will eat a pellet to incentivise the actual action.

Even though the agents start with the trained weight in every game, they still update their local weights for improved accuracy

Thanks & Questions