

Codingame Pacman Spring Challenge 2020

Features / Bug Fixes

- Only tiles where all pacman go are devoid of pellets. TODO
- Get full path by BFS and MOVE to only first tile. Helps in avoiding collision.
- Estimate opponent's immediate destination tiles. TODO
- Not all his pacmans are visible! BUG
- Don't follow opponent into dead end. TODO
- Speed up whenever not in speed mode. TODO
- Route to Big pellet right away. TODO
- Calc dist from each myPac to each oppPac. If any are closer than 3 tiles, switch to stronger type. TODO
- DFS n steps ahead and estimate value/return of that path. TODO
- Give reward for getting closer to a superpellet. TODO
- Move 2 steps at a time for speed up. TODO
- Route to non-visible pellets even if there are visible ones, if non-visible ones are far away. TODO
- Make potential pellets a fractional value based on how long ago they went out of sight.
- Resolve collisions when sped up: <https://www.codingame.com/share-replay/463983684>
- If it's first turn, we know enemy pac positions. TODO
- How to improve this performance: <https://www.codingame.com/share-replay/464100916>
- More Pacs than pellets remaining: <https://www.codingame.com/share-replay/464153339>
<https://www.codingame.com/share-replay/464214307>
- TODO Combinatorial path search instead of BFS to extend path:
<https://www.codingame.com/replay/464717151>
- How to improve this: <https://www.codingame.com/replay/465071235>
- TODO: Allow cycles in exhaustive search by allowing just 1 extra copy of a Tile* in the path.
- TODO: In exhaustive search,.. If a tile has pac on it, end path there if that tile has only 2 neighbours; regardless of whether it's my pac or enemy pac.
If it has 3 neighbours then somehow half all subsequent rewards if enemy pac. If it's my pac and it has decided a route already, check its next step and cut off path at its next step.
- BUG/TODO: Pac0 is taking very long paths to first pellets:
<https://www.codingame.com/share-replay/465101022>
Fixed by fixing reward.
- TODO: Keep probabilistic track of enemy pacs. Reset when visible.

- TODO: When an enemy pac is visible, all pellets on a singly-connected path gameSteps backwards from there should be gone.
- TODO: How to kill like he does?: <https://www.codingame.com/share-replay/467112502>

Replays

Collision

<https://www.codingame.com/replay/462468103>

Strange opponent estimates:

<https://www.codingame.com/share-replay/462510249>

Death by Scissors:

<https://www.codingame.com/replay/462545060>

ROFL Switches:

<https://www.codingame.com/share-replay/463314962>

Such a close match!:

<https://www.codingame.com/share-replay/464165510>

C++ Stuff

```
ForwardIterator min_element (ForwardIterator first, ForwardIterator last,
                             Compare comp);
```

C++ Pain

Tile needs empty constructor

unordered_map<Coord, Tile> tiles; default constructor is deleted

^Maybe this is because `tiles[key] = ...` was used at some point.

Hash function not defined for pair<int,int> ?

no matching function for call to 'std::map<std::pair<int, int>, Tile>::at(<brace-enclosed initializer list>)'?

--