

Hide-and-Seek Game

Here's a breakdown of how our hiders and seekers navigate the game arena, picking up rewards and learning strategies through simple rules:

For Seekers:

- *Area Coverage*: Seekers earn rewards based on how much area they explore.
- *Proximity to Hider*: Getting closer to the hider is a plus for seekers.
- *Avoiding Wall Collisions*: Seekers lose points for bumping into walls.
- *Successful Catch*: The ultimate reward comes when the seeker catches the hider.

For Hiders:

- *Area Coverage*: Like seekers, hiders gain rewards for the area they cover.
- *Distance from Seeker*: The farther from the seeker, the better for hiders.
- *Wall Avoidance*: Colliding with walls incurs penalties.
- *Successful Hiding*: Hiders score high when they stay out of the seeker's vision.

We implement the Q-learning algorithm to guide their decision-making. This algorithm helps agents choose the best actions based on their current situation. Agents can either try new actions or stick with what they know, and the algorithm decides this during the game.

Agents move freely, exploring and rotating during their turns. Every action is randomly chosen during exploration, ensuring it's a valid move without hitting walls. The Q-Table keeps track of actions and rewards, getting updated after each move.

To test the game, run the commands:

```
cd Group22_12041720_12040940_12040740_12040530_12041700
python run.py
```