**Warehouse Robot**

Warehouse Robot Navigation: Simulate a warehouse environment where a robot must learn to navigate through aisles to pick up and deliver items to specified locations. The environment can include multiple packages, dynamic obstacles, and varying layouts to increase complexity.

**State (S):**

* **Robot location:** (x, y) coordinates within the warehouse grid map.
* **Package locations:** (x, y) coordinates of all packages currently in the warehouse.
* **Delivery locations:** (x, y) coordinates of all designated delivery points for packages.
* **Obstacles:** Information about any obstacles (collision with other robots, drop objects) present in the environment.
* **(Inventory:** A list of packages currently carried by the robot, if any.)

**Actions (A):**

* **Movement:** Move up, down, left, or right within the grid.
* **Pick up:** Attempt to pick up a package at the current location if a package is present in there.
* **Drop off:** Attempt to drop off a package at a specific current location if a package is in the robot's inventory and the location matches the designated delivery point.

**Reward Function (R):**

* **Positive reward:**
  + Large reward for successfully delivering a package to its designated location.
  + Smaller reward for picking up a package.
* **Negative reward:**
  + Penalty for colliding with obstacles.
  + Small penalty for each movement action, with the aim of encouraging efficiency.
  + Penalty for attempting to pick up a package when the robot's inventory is full or no package is present.
  + Penalty for attempting to drop off a package at an incorrect location or when the robot is not carrying the package.

Try different parameters set

Focus on the report