---------------Mandatory Information to fill-----------

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Group ID: Group 278

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Autonomous Drone Battery Management for Urban Surveillance using DQN and DDQN - 7 Marks

Import Statements

```python
import numpy as np
import tensorflow as tf
from collections import deque
import random
import matplotlib.pyplot as plt
import time


# --- 1. Hyperparameters and Constants ---

# Environment Parameters
GRID_SIZE = (10, 10) # X, Y
BATTERY_CAPACITY = 100.0 # Percentage
INITIAL_BATTERY = 100.0

BASE_MOVE_COST = 0.5 # % battery per step
BASE_HOVER_COST = 0.2 # % battery per step
RECHARGE_RATE = 5.0 # % battery per step when recharging

BATTERY_CRASH_PENALTY = -100.0
TIME_PENALTY = -0.1 # Small penalty for each time step
RECHARGE_BONUS = 1.0 # Small bonus for successfully recharging

# POI Parameters
POI_SPAWN_CHANCE = 0.05 # Probability to spawn a new POI each step
MAX_ACTIVE_POIS = 3 # Max number of POIs active at once
POI_LIFESPAN_RANGE = (10, 30) # Min, Max timesteps a POI is active
```

```python
POI_VALUE_RANGE = (10, 50) # Min, Max surveillance score for a POI

# Atmospheric Disturbance Parameters
DISTURBANCE_FACTOR = 0.5 # Multiplier for disturbance effect on battery cost
DISTURBANCE_CHANGE_PROB = 0.1 # Probability disturbance changes randomly each ste
DISTURBANCE_MAGNITUDE_CHANGE = 0.1 # Max change when disturbance updates

# Agent Parameters
STATE_SIZE = 7 # [drone_x, drone_y, battery_level, disturbance, nearest_poi_dist,
ACTION_SIZE = 6 # North, South, East, West, Hover, Recharge

LEARNING_RATE = 0.001
DISCOUNT_FACTOR = 0.99 # Gamma

REPLAY_BUFFER_SIZE =50000
MIN_REPLAY_SIZE = 1000 # Start learning after this many experiences
BATCH_SIZE =64

EXPLORATION_MAX =1.0
EXPLORATION_MIN =0.05
EXPLORATION_DECAY = 0.995 # Decay epsilon over time

TARGET_UPDATE_FREQUENCY = 1000 # How often to update the target network

# Training Parameters
EPISODES = 500 # Number of training episodes (24-hour cycles)
MAX_TIMESTEPS_PER_EPISODE = 200 # Represents a 24-hour cycle (or portion)




# --- 2. Replay Buffer Class ---
import random
from collections import deque
import numpy as np

class ReplayBuffer:
    def __init__(self, capacity):
        """
        Replay Buffer to store environment transitions.
        :param capacity: Maximum number of transitions to store.
        """
        self.buffer = deque(maxlen=capacity)

    def add(self, state, action, reward, next_state, done):
        """
        Add a new transition to the buffer.
        :param state: Current state
        :param action: Action taken
        :param reward: Reward received
        :param next_state: Next state after action
        :param done: Boolean flag if episode ended
        """
        self.buffer.append((state, action, reward, next_state, done))
```

```python
    def sample(self, batch_size):
        """
        Randomly sample a batch of experiences.
        :param batch_size: Number of samples to draw
        :return: Tuple of (states, actions, rewards, next_states, dones)
        """
        batch = random.sample(self.buffer, batch_size)
        states, actions, rewards, next_states, dones = map(np.array, zip(*batch))
        return states, actions, rewards, next_states, dones

    def size(self):
        """Return the current size of internal memory."""
        return len(self.buffer)
```

⌄ --- 3. Custom Environment: DroneSurveillanceEnv --- - 2 Marks

```python
import numpy as np
import random

class DroneSurveillanceEnv:
    def __init__(self, grid_size, battery_capacity, initial_battery):
        # --- Drone State ---
        self.grid_width, self.grid_height = grid_size
        self.battery_capacity = battery_capacity
        self.initial_battery = initial_battery

        self.drone_x = 0
        self.drone_y = 0
        self.battery = self.initial_battery

        # --- Environmental Dynamics ---
        self.disturbance = np.random.uniform(0.0, 1.0)
        self.pois = []  # List of tuples: (x, y, value, lifespan)
        self.timestep = 0

        # Charging Stations (fixed locations)
        self.charging_stations = [(0, 0), (self.grid_width - 1, self.grid_height

        # Action mapping: 0:N, 1:S, 2:E, 3:W, 4:Hover, 5:Recharge
        self.action_space = 6
        self.state_size = 7  # [x, y, battery, disturbance, nearest_poi_dist, nea

    def reset(self):
        """Reset environment state at the beginning of an episode."""
        self.drone_x, self.drone_y = 0, 0
        self.battery = self.initial_battery
        self.disturbance = np.random.uniform(0.0, 1.0)
        self.pois = []
        self.timestep = 0
        return self._get_obs()

    def _get_obs(self):
```

```python
        """
        Converts the internal environment state into the observation vector for t
        """
        if self.pois:
            distances = [np.linalg.norm([self.drone_x - px, self.drone_y - py]) f
            idx = np.argmin(distances)
            nearest_dist = distances[idx]
            nearest_val = self.pois[idx][2]
            nearest_life = self.pois[idx][3]
        else:
            nearest_dist, nearest_val, nearest_life = 0.0, 0.0, 0

        return np.array([
            self.drone_x,
            self.drone_y,
            self.battery,
            self.disturbance,
            nearest_dist,
            nearest_val,
            nearest_life
        ], dtype=np.float32)

    def _spawn_poi(self):
        """Randomly spawn a POI in an unoccupied cell."""
        if len(self.pois) < MAX_ACTIVE_POIS and random.random() < POI_SPAWN_CHANC
            x, y = np.random.randint(0, self.grid_width), np.random.randint(0, se
            # Avoid drone, charging stations, and existing POIs
            if (x, y) != (self.drone_x, self.drone_y) and (x, y) not in self.char
                and all((x, y) != (px, py) for px, py, _, _ in self.pois):
                    value = np.random.randint(POI_VALUE_RANGE[0], POI_VALUE_RANGE[1]
                    lifespan = np.random.randint(POI_LIFESPAN_RANGE[0], POI_LIFESPAN_
                    self.pois.append((x, y, value, lifespan))

    def _update_pois(self, drone_at_poi_pos):
        """Decrease POI lifespan and remove collected POIs."""
        updated_pois = []
        reward = 0.0
        for px, py, val, life in self.pois:
            if (px, py) == drone_at_poi_pos:
                reward += val  # Collect reward
            elif life > 1:
                updated_pois.append((px, py, val, life - 1))
        self.pois = updated_pois
        return reward

    def _update_atmospheric_disturbance(self):
        """Randomly change atmospheric disturbance."""
        if random.random() < DISTURBANCE_CHANGE_PROB:
            change = np.random.uniform(-DISTURBANCE_MAGNITUDE_CHANGE, DISTURBANCE
            self.disturbance = np.clip(self.disturbance + change, 0.0, 1.0)

    def step(self, action):
        # --- Update Atmospheric Disturbance ---
        self._update_atmospheric_disturbance()
```

```python
        reward = 0.0
        done = False

        # --- Battery Consumption / Recharge ---
        if action in [0, 1, 2, 3]:  # Movement actions
            move_cost = BASE_MOVE_COST + (self.disturbance * DISTURBANCE_FACTOR)
            if action == 0 and self.drone_y < self.grid_height - 1:  # North
                self.drone_y += 1
            elif action == 1 and self.drone_y > 0:  # South
                self.drone_y -= 1
            elif action == 2 and self.drone_x < self.grid_width - 1:  # East
                self.drone_x += 1
            elif action == 3 and self.drone_x > 0:  # West
                self.drone_x -= 1
            self.battery -= move_cost

        elif action == 4:  # Hover
            hover_cost = BASE_HOVER_COST + (self.disturbance * DISTURBANCE_FACTOR
            self.battery -= hover_cost

        elif action == 5:  # Recharge
            if (self.drone_x, self.drone_y) in self.charging_stations:
                self.battery = min(self.battery_capacity, self.battery + RECHARGE
                reward += RECHARGE_BONUS
            else:
                hover_cost = BASE_HOVER_COST + (self.disturbance * DISTURBANCE_FA
                self.battery -= hover_cost

        # --- Check for Crash ---
        if self.battery <= 0:
            reward += BATTERY_CRASH_PENALTY
            done = True

        # --- Update POIs and Collect Rewards ---
        reward += self._update_pois((self.drone_x, self.drone_y))

        # --- Spawn new POIs randomly ---
        self._spawn_poi()

        # --- Add time penalty ---
        reward += TIME_PENALTY

        self.timestep += 1
        if self.timestep >= MAX_TIMESTEPS_PER_EPISODE:
            done = True

        return self._get_obs(), reward, done, {}

    def render(self):
        """Simple console render of the grid."""
        grid = [["." for _ in range(self.grid_width)] for _ in range(self.grid_he

        # Mark Charging Stations
        for cs in self.charging_stations:
            grid[cs[1]][cs[0]] = "C"
```

```
        # Mark Active POIs
        for px, py, _, _ in self.pois:
            grid[py][px] = "P"

        # Mark Drone
        grid[self.drone_y][self.drone_x] = "D"

        print("\n".join([" ".join(row) for row in grid]))
        print(f"Battery: {self.battery:.1f}%, Disturbance: {self.disturbance:.2f}
```

⌄   --- 4. DQNAgent Class --- 1 Mark

```python
import numpy as np
import torch
import torch.nn as nn
import torch.optim as optim

class DQNAgent:
    def __init__(self, state_size, action_size, use_ddqn=False):
        self.state_size = state_size
        self.action_size = action_size
        self.use_ddqn = use_ddqn

        # Hyperparameters
        self.gamma = DISCOUNT_FACTOR
        self.epsilon = EXPLORATION_MAX
        self.epsilon_min = EXPLORATION_MIN
        self.epsilon_decay = EXPLORATION_DECAY
        self.learning_rate = LEARNING_RATE

        # Replay buffer
        self.memory = ReplayBuffer(REPLAY_BUFFER_SIZE)

        # Networks
        self.policy_net = self._build_model()
        self.target_net = self._build_model()
        self.update_target_network()

        self.optimizer = optim.Adam(self.policy_net.parameters(), lr=self.learnin
        self.loss_fn = nn.MSELoss()

        # Step counter for target network updates
        self.learn_step_counter = 0

    def _build_model(self):
        """
        Builds the neural network for the Q-function.
        Input: State vector (STATE_SIZE)
        Output: Q-values for each action (ACTION_SIZE)
        """
        model = nn.Sequential(
```

```python
            nn.Linear(self.state_size, 64),
            nn.ReLU(),
            nn.Linear(64, 64),
            nn.ReLU(),
            nn.Linear(64, self.action_size)
        )
        return model

    def update_target_network(self):
        """Copy weights from policy network to target network."""
        self.target_net.load_state_dict(self.policy_net.state_dict())

    def choose_action(self, state):
        """
        Epsilon-greedy action selection.
        """
        if np.random.rand() < self.epsilon:
            return np.random.randint(self.action_size)
        state_tensor = torch.FloatTensor(state).unsqueeze(0)  # Add batch dimensi
        with torch.no_grad():
            q_values = self.policy_net(state_tensor)
        return torch.argmax(q_values).item()

    def learn(self):
        """
        Sample from replay buffer and update network weights.
        """
        if self.memory.size() < MIN_REPLAY_SIZE:
            return

        states, actions, rewards, next_states, dones = self.memory.sample(BATCH_S

        states = torch.FloatTensor(states)
        actions = torch.LongTensor(actions)
        rewards = torch.FloatTensor(rewards)
        next_states = torch.FloatTensor(next_states)
        dones = torch.FloatTensor(dones)

        # Current Q-values
        curr_q = self.policy_net(states).gather(1, actions.unsqueeze(1)).squeeze(

        # Target Q-values
        with torch.no_grad():
            if self.use_ddqn:
                # Double DQN: use policy net for action selection, target net for
                next_actions = self.policy_net(next_states).argmax(1)
                next_q = self.target_net(next_states).gather(1, next_actions.unsq
            else:
                # DQN: take max over target network directly
                next_q = self.target_net(next_states).max(1)[0]

            target_q = rewards + (1 - dones) * self.gamma * next_q

        # Loss
        loss = self.loss_fn(curr_q, target_q)
```

```python
        # Optimize
        self.optimizer.zero_grad()
        loss.backward()
        self.optimizer.step()

        # Update epsilon
        if self.epsilon > self.epsilon_min:
            self.epsilon *= self.epsilon_decay

        # Update target network
        self.learn_step_counter += 1
        if self.learn_step_counter % TARGET_UPDATE_FREQUENCY == 0:
            self.update_target_network()
```

⌄ --- 5. Main Training Loop --- 1 Mark

```python
def train_agent(env, agent, num_episodes, max_timesteps_per_episode, render=False
    episode_rewards = []

    for episode in range(num_episodes):
        state = env.reset()
        total_reward = 0

        for t in range(max_timesteps_per_episode):
            if render:
                env.render()

            # Choose action
            action = agent.choose_action(state)

            # Step environment
            next_state, reward, done, _ = env.step(action)

            # Store in replay buffer
            agent.memory.add(state, action, reward, next_state, done)

            # Learn from replay buffer
            agent.learn()

            state = next_state
            total_reward += reward

            if done:
                break

        episode_rewards.append(total_reward)

        print(f"Episode {episode+1}/{num_episodes} | Reward: {total_reward:.2f} |

    return episode_rewards
```

⌄ --- Main Execution Block ---

```python
if __name__ == "__main__":
    import matplotlib.pyplot as plt

    # Create environment
    env = DroneSurveillanceEnv(GRID_SIZE, BATTERY_CAPACITY, INITIAL_BATTERY)

    # --- Train DQN Agent ---
    print("\nTraining DQN Agent...")
    dqn_agent = DQNAgent(state_size=STATE_SIZE, action_size=ACTION_SIZE, use_ddqn
    dqn_rewards = train_agent(env, dqn_agent, EPISODES, MAX_TIMESTEPS_PER_EPISODE

    # --- Train Double DQN Agent ---
    print("\nTraining Double DQN Agent...")
    ddqn_agent = DQNAgent(state_size=STATE_SIZE, action_size=ACTION_SIZE, use_ddq
    ddqn_rewards = train_agent(env, ddqn_agent, EPISODES, MAX_TIMESTEPS_PER_EPISO
```

```python
# ––– Plotting Results –––
plt.figure(figsize=(10, 5))
plt.plot(dqn_rewards, label="DQN")
plt.plot(ddqn_rewards, label="Double DQN")
plt.xlabel("Episode")
plt.ylabel("Total Reward")
plt.title("DQN vs Double DQN Learning Curves")
plt.legend()
plt.grid(True)
plt.show()

# ––– Policy Analysis –––
print("\nPolicy Analysis:")
print("Final average reward (last 50 episodes) DQN:", np.mean(dqn_rewards[-50
print("Final average reward (last 50 episodes) DDQN:", np.mean(ddqn_rewards[-

# Evaluate trained agent's decision-making
print("\nEvaluating DQN agent on one episode...")
state = env.reset()
total_reward = 0
for t in range(MAX_TIMESTEPS_PER_EPISODE):
    action = dqn_agent.choose_action(state)
    next_state, reward, done, _ = env.step(action)
    total_reward += reward
    state = next_state
    env.render()
    if done:
        break
print(f"DQN Evaluation Total Reward: {total_reward:.2f}")

print("\nEvaluating Double DQN agent on one episode...")
state = env.reset()
total_reward = 0
for t in range(MAX_TIMESTEPS_PER_EPISODE):
    action = ddqn_agent.choose_action(state)
    next_state, reward, done, _ = env.step(action)
    total_reward += reward
    state = next_state
    env.render()
    if done:
        break
print(f"Double DQN Evaluation Total Reward: {total_reward:.2f}")
```

```
Training DQN Agent...
Episode 1/500 | Reward: -114.60 | Epsilon: 1.000
Episode 2/500 | Reward: -19.00 | Epsilon: 1.000
Episode 3/500 | Reward: -112.10 | Epsilon: 1.000
Episode 4/500 | Reward: -95.40 | Epsilon: 1.000
Episode 5/500 | Reward: -20.00 | Epsilon: 1.000
Episode 6/500 | Reward: -20.00 | Epsilon: 0.771
Episode 7/500 | Reward: -116.10 | Epsilon: 0.327
Episode 8/500 | Reward: -112.10 | Epsilon: 0.170
Episode 9/500 | Reward: -106.90 | Epsilon: 0.093
Episode 10/500 | Reward: -112.90 | Epsilon: 0.050
Episode 11/500 | Reward: -106.20 | Epsilon: 0.050
Episode 12/500 | Reward: -60.40 | Epsilon: 0.050
Episode 13/500 | Reward: -20.00 | Epsilon: 0.050
Episode 14/500 | Reward: -103.80 | Epsilon: 0.050
Episode 15/500 | Reward: -114.20 | Epsilon: 0.050
Episode 16/500 | Reward: -114.50 | Epsilon: 0.050
Episode 17/500 | Reward: -113.90 | Epsilon: 0.050
Episode 18/500 | Reward: -110.80 | Epsilon: 0.050
Episode 19/500 | Reward: -112.90 | Epsilon: 0.050
Episode 20/500 | Reward: -109.60 | Epsilon: 0.050
Episode 21/500 | Reward: -11.00 | Epsilon: 0.050
Episode 22/500 | Reward: -71.90 | Epsilon: 0.050
Episode 23/500 | Reward: -13.00 | Epsilon: 0.050
Episode 24/500 | Reward: 45.00 | Epsilon: 0.050
Episode 25/500 | Reward: -67.90 | Epsilon: 0.050
Episode 26/500 | Reward: -115.60 | Epsilon: 0.050
Episode 27/500 | Reward: -106.50 | Epsilon: 0.050
Episode 28/500 | Reward: -82.10 | Epsilon: 0.050
Episode 29/500 | Reward: -65.40 | Epsilon: 0.050
Episode 30/500 | Reward: -111.40 | Epsilon: 0.050
Episode 31/500 | Reward: -8.80 | Epsilon: 0.050
Episode 32/500 | Reward: -113.30 | Epsilon: 0.050
Episode 33/500 | Reward: 17.00 | Epsilon: 0.050
Episode 34/500 | Reward: -113.50 | Epsilon: 0.050
Episode 35/500 | Reward: -117.30 | Epsilon: 0.050
Episode 36/500 | Reward: -110.20 | Epsilon: 0.050
Episode 37/500 | Reward: -92.10 | Epsilon: 0.050
Episode 38/500 | Reward: 6.00 | Epsilon: 0.050
Episode 39/500 | Reward: 120.00 | Epsilon: 0.050
Episode 40/500 | Reward: 16.00 | Epsilon: 0.050
Episode 41/500 | Reward: -1.00 | Epsilon: 0.050
Episode 42/500 | Reward: 88.00 | Epsilon: 0.050
Episode 43/500 | Reward: -4.00 | Epsilon: 0.050
Episode 44/500 | Reward: -115.50 | Epsilon: 0.050
Episode 45/500 | Reward: -85.30 | Epsilon: 0.050
Episode 46/500 | Reward: 26.00 | Epsilon: 0.050
Episode 47/500 | Reward: -5.00 | Epsilon: 0.050
Episode 48/500 | Reward: 45.00 | Epsilon: 0.050
Episode 49/500 | Reward: 46.00 | Epsilon: 0.050
Episode 50/500 | Reward: -91.90 | Epsilon: 0.050
Episode 51/500 | Reward: -3.00 | Epsilon: 0.050
Episode 52/500 | Reward: 69.00 | Epsilon: 0.050
Episode 53/500 | Reward: -100.20 | Epsilon: 0.050
Episode 54/500 | Reward: 50.00 | Epsilon: 0.050
Episode 55/500 | Reward: 32.00 | Epsilon: 0.050
Episode 56/500 | Reward: -112.60 | Epsilon: 0.050
Episode 57/500 | Reward: -76.50 | Epsilon: 0.050
Episode 58/500 | Reward: -17.00 | Epsilon: 0.050
```

```
Episode 59/500  | Reward: 50.00  | Epsilon: 0.050
Episode 60/500  | Reward: 3.00   | Epsilon: 0.050
Episode 61/500  | Reward: 17.00  | Epsilon: 0.050
Episode 62/500  | Reward: 13.00  | Epsilon: 0.050
Episode 63/500  | Reward: 6.00   | Epsilon: 0.050
Episode 64/500  | Reward: 16.00  | Epsilon: 0.050
Episode 65/500  | Reward: -40.90 | Epsilon: 0.050
Episode 66/500  | Reward: 7.00   | Epsilon: 0.050
Episode 67/500  | Reward: 94.00  | Epsilon: 0.050
Episode 68/500  | Reward: 100.00 | Epsilon: 0.050
Episode 69/500  | Reward: -55.70 | Epsilon: 0.050
Episode 70/500  | Reward: 29.00  | Epsilon: 0.050
Episode 71/500  | Reward: 42.00  | Epsilon: 0.050
Episode 72/500  | Reward: 39.00  | Epsilon: 0.050
Episode 73/500  | Reward: 43.00  | Epsilon: 0.050
Episode 74/500  | Reward: -1.00  | Epsilon: 0.050
Episode 75/500  | Reward: -105.40 | Epsilon: 0.050
Episode 76/500  | Reward: 31.00  | Epsilon: 0.050
Episode 77/500  | Reward: 139.00 | Epsilon: 0.050
Episode 78/500  | Reward: 63.00  | Epsilon: 0.050
Episode 79/500  | Reward: 76.00  | Epsilon: 0.050
Episode 80/500  | Reward: 96.00  | Epsilon: 0.050
Episode 81/500  | Reward: -73.90 | Epsilon: 0.050
Episode 82/500  | Reward: 110.00 | Epsilon: 0.050
Episode 83/500  | Reward: 31.00  | Epsilon: 0.050
Episode 84/500  | Reward: 73.00  | Epsilon: 0.050
Episode 85/500  | Reward: 6.00   | Epsilon: 0.050
Episode 86/500  | Reward: 177.00 | Epsilon: 0.050
Episode 87/500  | Reward: -85.40 | Epsilon: 0.050
Episode 88/500  | Reward: -100.70 | Epsilon: 0.050
Episode 89/500  | Reward: -74.80 | Epsilon: 0.050
Episode 90/500  | Reward: -84.20 | Epsilon: 0.050
Episode 91/500  | Reward: -15.00 | Epsilon: 0.050
Episode 92/500  | Reward: 127.00 | Epsilon: 0.050
Episode 93/500  | Reward: 50.00  | Epsilon: 0.050
Episode 94/500  | Reward: 22.00  | Epsilon: 0.050
Episode 95/500  | Reward: 4.00   | Epsilon: 0.050
Episode 96/500  | Reward: 9.00   | Epsilon: 0.050
Episode 97/500  | Reward: 87.00  | Epsilon: 0.050
Episode 98/500  | Reward: 12.00  | Epsilon: 0.050
Episode 99/500  | Reward: 49.00  | Epsilon: 0.050
Episode 100/500 | Reward: 129.00 | Epsilon: 0.050
Episode 101/500 | Reward: 128.00 | Epsilon: 0.050
Episode 102/500 | Reward: 85.00  | Epsilon: 0.050
Episode 103/500 | Reward: 133.00 | Epsilon: 0.050
Episode 104/500 | Reward: -7.00  | Epsilon: 0.050
Episode 105/500 | Reward: -2.00  | Epsilon: 0.050
Episode 106/500 | Reward: 42.00  | Epsilon: 0.050
Episode 107/500 | Reward: 132.00 | Epsilon: 0.050
Episode 108/500 | Reward: 165.00 | Epsilon: 0.050
Episode 109/500 | Reward: -36.30 | Epsilon: 0.050
Episode 110/500 | Reward: 140.00 | Epsilon: 0.050
Episode 111/500 | Reward: 109.00 | Epsilon: 0.050
Episode 112/500 | Reward: 50.00  | Epsilon: 0.050
Episode 113/500 | Reward: 116.00 | Epsilon: 0.050
Episode 114/500 | Reward: 149.00 | Epsilon: 0.050
Episode 115/500 | Reward: 75.00  | Epsilon: 0.050
Episode 116/500 | Reward: 136.00 | Epsilon: 0.050
Episode 117/500 | Reward: 106.00 | Epsilon: 0.050
Episode 118/500 | Reward: 100.00 | Epsilon: 0.050
Episode 119/500 | Reward: 121.00 | Epsilon: 0.050
```

```
Episode 119/500 | Reward: 121.00 | Epsilon: 0.050
Episode 120/500 | Reward: 141.00 | Epsilon: 0.050
Episode 121/500 | Reward: 76.00 | Epsilon: 0.050
Episode 122/500 | Reward: 48.00 | Epsilon: 0.050
Episode 123/500 | Reward: 147.00 | Epsilon: 0.050
Episode 124/500 | Reward: -37.70 | Epsilon: 0.050
Episode 125/500 | Reward: 71.00 | Epsilon: 0.050
Episode 126/500 | Reward: 171.00 | Epsilon: 0.050
Episode 127/500 | Reward: 89.00 | Epsilon: 0.050
Episode 128/500 | Reward: 175.00 | Epsilon: 0.050
Episode 129/500 | Reward: 69.00 | Epsilon: 0.050
Episode 130/500 | Reward: 86.00 | Epsilon: 0.050
Episode 131/500 | Reward: -76.20 | Epsilon: 0.050
Episode 132/500 | Reward: 122.00 | Epsilon: 0.050
Episode 133/500 | Reward: 101.00 | Epsilon: 0.050
Episode 134/500 | Reward: 62.00 | Epsilon: 0.050
Episode 135/500 | Reward: 100.00 | Epsilon: 0.050
Episode 136/500 | Reward: 170.00 | Epsilon: 0.050
Episode 137/500 | Reward: 124.00 | Epsilon: 0.050
Episode 138/500 | Reward: 151.00 | Epsilon: 0.050
Episode 139/500 | Reward: 172.00 | Epsilon: 0.050
Episode 140/500 | Reward: 151.00 | Epsilon: 0.050
Episode 141/500 | Reward: -55.00 | Epsilon: 0.050
Episode 142/500 | Reward: 86.00 | Epsilon: 0.050
Episode 143/500 | Reward: -66.20 | Epsilon: 0.050
Episode 144/500 | Reward: 9.00 | Epsilon: 0.050
Episode 145/500 | Reward: 125.00 | Epsilon: 0.050
Episode 146/500 | Reward: 58.00 | Epsilon: 0.050
Episode 147/500 | Reward: 46.00 | Epsilon: 0.050
Episode 148/500 | Reward: 145.00 | Epsilon: 0.050
Episode 149/500 | Reward: 143.00 | Epsilon: 0.050
Episode 150/500 | Reward: 141.00 | Epsilon: 0.050
Episode 151/500 | Reward: 160.00 | Epsilon: 0.050
Episode 152/500 | Reward: 129.00 | Epsilon: 0.050
Episode 153/500 | Reward: 111.00 | Epsilon: 0.050
Episode 154/500 | Reward: 118.00 | Epsilon: 0.050
Episode 155/500 | Reward: -80.80 | Epsilon: 0.050
Episode 156/500 | Reward: -106.30 | Epsilon: 0.050
Episode 157/500 | Reward: -71.50 | Epsilon: 0.050
Episode 158/500 | Reward: 174.00 | Epsilon: 0.050
Episode 159/500 | Reward: 91.00 | Epsilon: 0.050
Episode 160/500 | Reward: 107.00 | Epsilon: 0.050
Episode 161/500 | Reward: 142.00 | Epsilon: 0.050
Episode 162/500 | Reward: 104.00 | Epsilon: 0.050
Episode 163/500 | Reward: 159.00 | Epsilon: 0.050
Episode 164/500 | Reward: -92.60 | Epsilon: 0.050
Episode 165/500 | Reward: 134.00 | Epsilon: 0.050
Episode 166/500 | Reward: 169.00 | Epsilon: 0.050
Episode 167/500 | Reward: 130.00 | Epsilon: 0.050
Episode 168/500 | Reward: 121.00 | Epsilon: 0.050
Episode 169/500 | Reward: 135.00 | Epsilon: 0.050
Episode 170/500 | Reward: 128.00 | Epsilon: 0.050
Episode 171/500 | Reward: 172.00 | Epsilon: 0.050
Episode 172/500 | Reward: 156.00 | Epsilon: 0.050
Episode 173/500 | Reward: 155.00 | Epsilon: 0.050
Episode 174/500 | Reward: 156.00 | Epsilon: 0.050
Episode 175/500 | Reward: 110.00 | Epsilon: 0.050
Episode 176/500 | Reward: 139.00 | Epsilon: 0.050
Episode 177/500 | Reward: 166.00 | Epsilon: 0.050
Episode 178/500 | Reward: 163.00 | Epsilon: 0.050
Episode 179/500 | Reward: 89.00 | Epsilon: 0.050
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Episode 180/500 | Reward: 174.00 | Epsilon: 0.050
Episode 181/500 | Reward: 158.00 | Epsilon: 0.050
Episode 182/500 | Reward: 134.00 | Epsilon: 0.050
Episode 183/500 | Reward: 61.00 | Epsilon: 0.050
Episode 184/500 | Reward: 126.00 | Epsilon: 0.050
Episode 185/500 | Reward: 34.00 | Epsilon: 0.050
Episode 186/500 | Reward: 144.00 | Epsilon: 0.050
Episode 187/500 | Reward: 166.00 | Epsilon: 0.050
Episode 188/500 | Reward: 112.00 | Epsilon: 0.050
Episode 189/500 | Reward: 172.00 | Epsilon: 0.050
Episode 190/500 | Reward: 121.00 | Epsilon: 0.050
Episode 191/500 | Reward: 158.00 | Epsilon: 0.050
Episode 192/500 | Reward: 144.00 | Epsilon: 0.050
Episode 193/500 | Reward: 109.00 | Epsilon: 0.050
Episode 194/500 | Reward: 140.00 | Epsilon: 0.050
Episode 195/500 | Reward: 171.00 | Epsilon: 0.050
Episode 196/500 | Reward: 173.00 | Epsilon: 0.050
Episode 197/500 | Reward: 169.00 | Epsilon: 0.050
Episode 198/500 | Reward: 151.00 | Epsilon: 0.050
Episode 199/500 | Reward: 167.00 | Epsilon: 0.050
Episode 200/500 | Reward: 160.00 | Epsilon: 0.050
Episode 201/500 | Reward: 177.00 | Epsilon: 0.050
Episode 202/500 | Reward: 163.00 | Epsilon: 0.050
Episode 203/500 | Reward: 149.00 | Epsilon: 0.050
Episode 204/500 | Reward: 154.00 | Epsilon: 0.050
Episode 205/500 | Reward: 130.00 | Epsilon: 0.050
Episode 206/500 | Reward: 158.00 | Epsilon: 0.050
Episode 207/500 | Reward: 164.00 | Epsilon: 0.050
Episode 208/500 | Reward: 154.00 | Epsilon: 0.050
Episode 209/500 | Reward: 160.00 | Epsilon: 0.050
Episode 210/500 | Reward: 130.00 | Epsilon: 0.050
Episode 211/500 | Reward: 162.00 | Epsilon: 0.050
Episode 212/500 | Reward: 148.00 | Epsilon: 0.050
Episode 213/500 | Reward: 139.00 | Epsilon: 0.050
Episode 214/500 | Reward: 164.00 | Epsilon: 0.050
Episode 215/500 | Reward: 130.00 | Epsilon: 0.050
Episode 216/500 | Reward: 155.00 | Epsilon: 0.050
Episode 217/500 | Reward: 155.00 | Epsilon: 0.050
Episode 218/500 | Reward: 168.00 | Epsilon: 0.050
Episode 219/500 | Reward: 107.00 | Epsilon: 0.050
Episode 220/500 | Reward: 139.00 | Epsilon: 0.050
Episode 221/500 | Reward: 169.00 | Epsilon: 0.050
Episode 222/500 | Reward: 116.00 | Epsilon: 0.050
Episode 223/500 | Reward: 144.00 | Epsilon: 0.050
Episode 224/500 | Reward: 171.00 | Epsilon: 0.050
Episode 225/500 | Reward: 159.00 | Epsilon: 0.050
Episode 226/500 | Reward: 164.00 | Epsilon: 0.050
Episode 227/500 | Reward: 146.00 | Epsilon: 0.050
Episode 228/500 | Reward: 149.00 | Epsilon: 0.050
Episode 229/500 | Reward: 135.00 | Epsilon: 0.050
Episode 230/500 | Reward: 150.00 | Epsilon: 0.050
Episode 231/500 | Reward: 136.00 | Epsilon: 0.050
Episode 232/500 | Reward: 172.00 | Epsilon: 0.050
Episode 233/500 | Reward: 135.00 | Epsilon: 0.050
Episode 234/500 | Reward: 129.00 | Epsilon: 0.050
Episode 235/500 | Reward: 155.00 | Epsilon: 0.050
Episode 236/500 | Reward: 152.00 | Epsilon: 0.050
Episode 237/500 | Reward: 96.00 | Epsilon: 0.050
Episode 238/500 | Reward: 153.00 | Epsilon: 0.050
Episode 239/500 | Reward: 165.00 | Epsilon: 0.050
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Episode 240/500 | Reward: 161.00 | Epsilon: 0.050
Episode 241/500 | Reward: 162.00 | Epsilon: 0.050
Episode 242/500 | Reward: 138.00 | Epsilon: 0.050
Episode 243/500 | Reward: -104.90 | Epsilon: 0.050
Episode 244/500 | Reward: 168.00 | Epsilon: 0.050
Episode 245/500 | Reward: 168.00 | Epsilon: 0.050
Episode 246/500 | Reward: 164.00 | Epsilon: 0.050
Episode 247/500 | Reward: 161.00 | Epsilon: 0.050
Episode 248/500 | Reward: 172.00 | Epsilon: 0.050
Episode 249/500 | Reward: 151.00 | Epsilon: 0.050
Episode 250/500 | Reward: 165.00 | Epsilon: 0.050
Episode 251/500 | Reward: 131.00 | Epsilon: 0.050
Episode 252/500 | Reward: 137.00 | Epsilon: 0.050
Episode 253/500 | Reward: 173.00 | Epsilon: 0.050
Episode 254/500 | Reward: 148.00 | Epsilon: 0.050
Episode 255/500 | Reward: 156.00 | Epsilon: 0.050
Episode 256/500 | Reward: 167.00 | Epsilon: 0.050
Episode 257/500 | Reward: 141.00 | Epsilon: 0.050
Episode 258/500 | Reward: 149.00 | Epsilon: 0.050
Episode 259/500 | Reward: 158.00 | Epsilon: 0.050
Episode 260/500 | Reward: 156.00 | Epsilon: 0.050
Episode 261/500 | Reward: 162.00 | Epsilon: 0.050
Episode 262/500 | Reward: 111.00 | Epsilon: 0.050
Episode 263/500 | Reward: 167.00 | Epsilon: 0.050
Episode 264/500 | Reward: 169.00 | Epsilon: 0.050
Episode 265/500 | Reward: 127.00 | Epsilon: 0.050
Episode 266/500 | Reward: 141.00 | Epsilon: 0.050
Episode 267/500 | Reward: 154.00 | Epsilon: 0.050
Episode 268/500 | Reward: 148.00 | Epsilon: 0.050
Episode 269/500 | Reward: 153.00 | Epsilon: 0.050
Episode 270/500 | Reward: 129.00 | Epsilon: 0.050
Episode 271/500 | Reward: 158.00 | Epsilon: 0.050
Episode 272/500 | Reward: 162.00 | Epsilon: 0.050
Episode 273/500 | Reward: 146.00 | Epsilon: 0.050
Episode 274/500 | Reward: 149.00 | Epsilon: 0.050
Episode 275/500 | Reward: 164.00 | Epsilon: 0.050
Episode 276/500 | Reward: 139.00 | Epsilon: 0.050
Episode 277/500 | Reward: 134.00 | Epsilon: 0.050
Episode 278/500 | Reward: 171.00 | Epsilon: 0.050
Episode 279/500 | Reward: 160.00 | Epsilon: 0.050
Episode 280/500 | Reward: 155.00 | Epsilon: 0.050
Episode 281/500 | Reward: 166.00 | Epsilon: 0.050
Episode 282/500 | Reward: 168.00 | Epsilon: 0.050
Episode 283/500 | Reward: 144.00 | Epsilon: 0.050
Episode 284/500 | Reward: 149.00 | Epsilon: 0.050
Episode 285/500 | Reward: 174.00 | Epsilon: 0.050
Episode 286/500 | Reward: 166.00 | Epsilon: 0.050
Episode 287/500 | Reward: 175.00 | Epsilon: 0.050
Episode 288/500 | Reward: 154.00 | Epsilon: 0.050
Episode 289/500 | Reward: 170.00 | Epsilon: 0.050
Episode 290/500 | Reward: 142.00 | Epsilon: 0.050
Episode 291/500 | Reward: 164.00 | Epsilon: 0.050
Episode 292/500 | Reward: 140.00 | Epsilon: 0.050
Episode 293/500 | Reward: 160.00 | Epsilon: 0.050
Episode 294/500 | Reward: 122.00 | Epsilon: 0.050
Episode 295/500 | Reward: 171.00 | Epsilon: 0.050
Episode 296/500 | Reward: 158.00 | Epsilon: 0.050
Episode 297/500 | Reward: 167.00 | Epsilon: 0.050
Episode 298/500 | Reward: 168.00 | Epsilon: 0.050
Episode 299/500 | Reward: 151.00 | Epsilon: 0.050
Episode 300/500 | Reward: 158.00 | Epsilon: 0.050
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Episode 301/500 | Reward: 168.00 | Epsilon: 0.050
Episode 302/500 | Reward: 160.00 | Epsilon: 0.050
Episode 303/500 | Reward: 161.00 | Epsilon: 0.050
Episode 304/500 | Reward: 163.00 | Epsilon: 0.050
Episode 305/500 | Reward: 153.00 | Epsilon: 0.050
Episode 306/500 | Reward: 153.00 | Epsilon: 0.050
Episode 307/500 | Reward: 134.00 | Epsilon: 0.050
Episode 308/500 | Reward: 172.00 | Epsilon: 0.050
Episode 309/500 | Reward: 150.00 | Epsilon: 0.050
Episode 310/500 | Reward: 167.00 | Epsilon: 0.050
Episode 311/500 | Reward: 146.00 | Epsilon: 0.050
Episode 312/500 | Reward: 170.00 | Epsilon: 0.050
Episode 313/500 | Reward: 153.00 | Epsilon: 0.050
Episode 314/500 | Reward: 163.00 | Epsilon: 0.050
Episode 315/500 | Reward: 167.00 | Epsilon: 0.050
Episode 316/500 | Reward: 194.00 | Epsilon: 0.050
Episode 317/500 | Reward: 169.00 | Epsilon: 0.050
Episode 318/500 | Reward: 162.00 | Epsilon: 0.050
Episode 319/500 | Reward: 158.00 | Epsilon: 0.050
Episode 320/500 | Reward: 152.00 | Epsilon: 0.050
Episode 321/500 | Reward: 160.00 | Epsilon: 0.050
Episode 322/500 | Reward: 162.00 | Epsilon: 0.050
Episode 323/500 | Reward: 173.00 | Epsilon: 0.050
Episode 324/500 | Reward: 172.00 | Epsilon: 0.050
Episode 325/500 | Reward: 166.00 | Epsilon: 0.050
Episode 326/500 | Reward: 111.00 | Epsilon: 0.050
Episode 327/500 | Reward: 168.00 | Epsilon: 0.050
Episode 328/500 | Reward: 165.00 | Epsilon: 0.050
Episode 329/500 | Reward: 152.00 | Epsilon: 0.050
Episode 330/500 | Reward: 151.00 | Epsilon: 0.050
Episode 331/500 | Reward: 163.00 | Epsilon: 0.050
Episode 332/500 | Reward: 131.00 | Epsilon: 0.050
Episode 333/500 | Reward: 166.00 | Epsilon: 0.050
Episode 334/500 | Reward: 168.00 | Epsilon: 0.050
Episode 335/500 | Reward: 155.00 | Epsilon: 0.050
Episode 336/500 | Reward: 167.00 | Epsilon: 0.050
Episode 337/500 | Reward: 167.00 | Epsilon: 0.050
Episode 338/500 | Reward: 143.00 | Epsilon: 0.050
Episode 339/500 | Reward: 172.00 | Epsilon: 0.050
Episode 340/500 | Reward: 163.00 | Epsilon: 0.050
Episode 341/500 | Reward: 168.00 | Epsilon: 0.050
Episode 342/500 | Reward: 166.00 | Epsilon: 0.050
Episode 343/500 | Reward: 158.00 | Epsilon: 0.050
Episode 344/500 | Reward: 135.00 | Epsilon: 0.050
Episode 345/500 | Reward: 160.00 | Epsilon: 0.050
Episode 346/500 | Reward: 166.00 | Epsilon: 0.050
Episode 347/500 | Reward: 165.00 | Epsilon: 0.050
Episode 348/500 | Reward: 147.00 | Epsilon: 0.050
Episode 349/500 | Reward: 174.00 | Epsilon: 0.050
Episode 350/500 | Reward: 173.00 | Epsilon: 0.050
Episode 351/500 | Reward: 162.00 | Epsilon: 0.050
Episode 352/500 | Reward: 154.00 | Epsilon: 0.050
Episode 353/500 | Reward: 170.00 | Epsilon: 0.050
Episode 354/500 | Reward: 162.00 | Epsilon: 0.050
Episode 355/500 | Reward: 168.00 | Epsilon: 0.050
Episode 356/500 | Reward: 128.00 | Epsilon: 0.050
Episode 357/500 | Reward: 149.00 | Epsilon: 0.050
Episode 358/500 | Reward: 163.00 | Epsilon: 0.050
Episode 359/500 | Reward: 166.00 | Epsilon: 0.050
Episode 360/500 | Reward: 159.00 | Epsilon: 0.050
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Episode 361/500 | Reward: 173.00 | Epsilon: 0.050
Episode 362/500 | Reward: 147.00 | Epsilon: 0.050
Episode 363/500 | Reward: 163.00 | Epsilon: 0.050
Episode 364/500 | Reward: 162.00 | Epsilon: 0.050
Episode 365/500 | Reward: 166.00 | Epsilon: 0.050
Episode 366/500 | Reward: 168.00 | Epsilon: 0.050
Episode 367/500 | Reward: 164.00 | Epsilon: 0.050
Episode 368/500 | Reward: 174.00 | Epsilon: 0.050
Episode 369/500 | Reward: 176.00 | Epsilon: 0.050
Episode 370/500 | Reward: 163.00 | Epsilon: 0.050
Episode 371/500 | Reward: 146.00 | Epsilon: 0.050
Episode 372/500 | Reward: 163.00 | Epsilon: 0.050
Episode 373/500 | Reward: 161.00 | Epsilon: 0.050
Episode 374/500 | Reward: 151.00 | Epsilon: 0.050
Episode 375/500 | Reward: 166.00 | Epsilon: 0.050
Episode 376/500 | Reward: 168.00 | Epsilon: 0.050
Episode 377/500 | Reward: 214.00 | Epsilon: 0.050
Episode 378/500 | Reward: 159.00 | Epsilon: 0.050
Episode 379/500 | Reward: 181.00 | Epsilon: 0.050
Episode 380/500 | Reward: 139.00 | Epsilon: 0.050
Episode 381/500 | Reward: 177.00 | Epsilon: 0.050
Episode 382/500 | Reward: 175.00 | Epsilon: 0.050
Episode 383/500 | Reward: 156.00 | Epsilon: 0.050
Episode 384/500 | Reward: 174.00 | Epsilon: 0.050
Episode 385/500 | Reward: 165.00 | Epsilon: 0.050
Episode 386/500 | Reward: 164.00 | Epsilon: 0.050
Episode 387/500 | Reward: 164.00 | Epsilon: 0.050
Episode 388/500 | Reward: 165.00 | Epsilon: 0.050
Episode 389/500 | Reward: 170.00 | Epsilon: 0.050
Episode 390/500 | Reward: 171.00 | Epsilon: 0.050
Episode 391/500 | Reward: 156.00 | Epsilon: 0.050
Episode 392/500 | Reward: 155.00 | Epsilon: 0.050
Episode 393/500 | Reward: 156.00 | Epsilon: 0.050
Episode 394/500 | Reward: 173.00 | Epsilon: 0.050
Episode 395/500 | Reward: 169.00 | Epsilon: 0.050
Episode 396/500 | Reward: 172.00 | Epsilon: 0.050
Episode 397/500 | Reward: 171.00 | Epsilon: 0.050
Episode 398/500 | Reward: 147.00 | Epsilon: 0.050
Episode 399/500 | Reward: 168.00 | Epsilon: 0.050
Episode 400/500 | Reward: 147.00 | Epsilon: 0.050
Episode 401/500 | Reward: 152.00 | Epsilon: 0.050
Episode 402/500 | Reward: 169.00 | Epsilon: 0.050
Episode 403/500 | Reward: 190.00 | Epsilon: 0.050
Episode 404/500 | Reward: 185.00 | Epsilon: 0.050
Episode 405/500 | Reward: 164.00 | Epsilon: 0.050
Episode 406/500 | Reward: 176.00 | Epsilon: 0.050
Episode 407/500 | Reward: 158.00 | Epsilon: 0.050
Episode 408/500 | Reward: 155.00 | Epsilon: 0.050
Episode 409/500 | Reward: 139.00 | Epsilon: 0.050
Episode 410/500 | Reward: 150.00 | Epsilon: 0.050
Episode 411/500 | Reward: 194.00 | Epsilon: 0.050
Episode 412/500 | Reward: 154.00 | Epsilon: 0.050
Episode 413/500 | Reward: 177.00 | Epsilon: 0.050
Episode 414/500 | Reward: 132.00 | Epsilon: 0.050
Episode 415/500 | Reward: 157.00 | Epsilon: 0.050
Episode 416/500 | Reward: 169.00 | Epsilon: 0.050
Episode 417/500 | Reward: 170.00 | Epsilon: 0.050
Episode 418/500 | Reward: 143.00 | Epsilon: 0.050
Episode 419/500 | Reward: 158.00 | Epsilon: 0.050
Episode 420/500 | Reward: 147.00 | Epsilon: 0.050
Episode 421/500 | Reward: 167.00 | Epsilon: 0.050
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Episode 421/500 | Reward: 167.00 | Epsilon: 0.050
Episode 422/500 | Reward: 152.00 | Epsilon: 0.050
Episode 423/500 | Reward: 168.00 | Epsilon: 0.050
Episode 424/500 | Reward: 185.00 | Epsilon: 0.050
Episode 425/500 | Reward: 166.00 | Epsilon: 0.050
Episode 426/500 | Reward: 168.00 | Epsilon: 0.050
Episode 427/500 | Reward: 104.00 | Epsilon: 0.050
Episode 428/500 | Reward: 155.00 | Epsilon: 0.050
Episode 429/500 | Reward: 164.00 | Epsilon: 0.050
Episode 430/500 | Reward: 157.00 | Epsilon: 0.050
Episode 431/500 | Reward: 143.00 | Epsilon: 0.050
Episode 432/500 | Reward: 108.00 | Epsilon: 0.050
Episode 433/500 | Reward: 119.00 | Epsilon: 0.050
Episode 434/500 | Reward: 80.00 | Epsilon: 0.050
Episode 435/500 | Reward: 118.00 | Epsilon: 0.050
Episode 436/500 | Reward: 149.00 | Epsilon: 0.050
Episode 437/500 | Reward: 170.00 | Epsilon: 0.050
Episode 438/500 | Reward: 156.00 | Epsilon: 0.050
Episode 439/500 | Reward: 162.00 | Epsilon: 0.050
Episode 440/500 | Reward: 92.00 | Epsilon: 0.050
Episode 441/500 | Reward: 168.00 | Epsilon: 0.050
Episode 442/500 | Reward: 165.00 | Epsilon: 0.050
Episode 443/500 | Reward: 51.00 | Epsilon: 0.050
Episode 444/500 | Reward: 153.00 | Epsilon: 0.050
Episode 445/500 | Reward: 113.00 | Epsilon: 0.050
Episode 446/500 | Reward: 69.00 | Epsilon: 0.050
Episode 447/500 | Reward: 138.00 | Epsilon: 0.050
Episode 448/500 | Reward: 78.00 | Epsilon: 0.050
Episode 449/500 | Reward: 101.00 | Epsilon: 0.050
Episode 450/500 | Reward: 164.00 | Epsilon: 0.050
Episode 451/500 | Reward: 173.00 | Epsilon: 0.050
Episode 452/500 | Reward: 203.00 | Epsilon: 0.050
Episode 453/500 | Reward: 200.00 | Epsilon: 0.050
Episode 454/500 | Reward: 158.00 | Epsilon: 0.050
Episode 455/500 | Reward: 93.00 | Epsilon: 0.050
Episode 456/500 | Reward: 162.00 | Epsilon: 0.050
Episode 457/500 | Reward: 120.00 | Epsilon: 0.050
Episode 458/500 | Reward: 165.00 | Epsilon: 0.050
Episode 459/500 | Reward: 157.00 | Epsilon: 0.050
Episode 460/500 | Reward: 149.00 | Epsilon: 0.050
Episode 461/500 | Reward: 142.00 | Epsilon: 0.050
Episode 462/500 | Reward: 104.00 | Epsilon: 0.050
Episode 463/500 | Reward: 100.00 | Epsilon: 0.050
Episode 464/500 | Reward: 109.00 | Epsilon: 0.050
Episode 465/500 | Reward: 38.00 | Epsilon: 0.050
Episode 466/500 | Reward: 167.00 | Epsilon: 0.050
Episode 467/500 | Reward: 128.00 | Epsilon: 0.050
Episode 468/500 | Reward: 149.00 | Epsilon: 0.050
Episode 469/500 | Reward: 123.00 | Epsilon: 0.050
Episode 470/500 | Reward: 174.00 | Epsilon: 0.050
Episode 471/500 | Reward: 120.00 | Epsilon: 0.050
Episode 472/500 | Reward: 101.00 | Epsilon: 0.050
Episode 473/500 | Reward: 194.00 | Epsilon: 0.050
Episode 474/500 | Reward: 166.00 | Epsilon: 0.050
Episode 475/500 | Reward: 197.00 | Epsilon: 0.050
Episode 476/500 | Reward: 213.00 | Epsilon: 0.050
Episode 477/500 | Reward: 170.00 | Epsilon: 0.050
Episode 478/500 | Reward: 165.00 | Epsilon: 0.050
Episode 479/500 | Reward: 143.00 | Epsilon: 0.050
Episode 480/500 | Reward: 198.00 | Epsilon: 0.050
Episode 481/500 | Reward: 246.00 | Epsilon: 0.050
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Episode 482/500 | Reward: 196.00 | Epsilon: 0.050
Episode 483/500 | Reward: 178.00 | Epsilon: 0.050
Episode 484/500 | Reward: 139.00 | Epsilon: 0.050
Episode 485/500 | Reward: 133.00 | Epsilon: 0.050
Episode 486/500 | Reward: 132.00 | Epsilon: 0.050
Episode 487/500 | Reward: 178.00 | Epsilon: 0.050
Episode 488/500 | Reward: 138.00 | Epsilon: 0.050
Episode 489/500 | Reward: 175.00 | Epsilon: 0.050
Episode 490/500 | Reward: 156.00 | Epsilon: 0.050
Episode 491/500 | Reward: 159.00 | Epsilon: 0.050
Episode 492/500 | Reward: 143.00 | Epsilon: 0.050
Episode 493/500 | Reward: 192.00 | Epsilon: 0.050
Episode 494/500 | Reward: 144.00 | Epsilon: 0.050
Episode 495/500 | Reward: 137.00 | Epsilon: 0.050
Episode 496/500 | Reward: 149.00 | Epsilon: 0.050
Episode 497/500 | Reward: 160.00 | Epsilon: 0.050
Episode 498/500 | Reward: 135.00 | Epsilon: 0.050
Episode 499/500 | Reward: 91.00 | Epsilon: 0.050
Episode 500/500 | Reward: 155.00 | Epsilon: 0.050


Training Double DQN Agent...
Episode 1/500 | Reward: 24.00 | Epsilon: 1.000
Episode 2/500 | Reward: -114.40 | Epsilon: 1.000
Episode 3/500 | Reward: -10.00 | Epsilon: 1.000
Episode 4/500 | Reward: -20.00 | Epsilon: 1.000
Episode 5/500 | Reward: -112.00 | Epsilon: 1.000
Episode 6/500 | Reward: -103.10 | Epsilon: 0.835
Episode 7/500 | Reward: 13.00 | Epsilon: 0.306
Episode 8/500 | Reward: -118.80 | Epsilon: 0.119
Episode 9/500 | Reward: -13.00 | Epsilon: 0.050
Episode 10/500 | Reward: -7.00 | Epsilon: 0.050
Episode 11/500 | Reward: -18.00 | Epsilon: 0.050
Episode 12/500 | Reward: 15.00 | Epsilon: 0.050
Episode 13/500 | Reward: 24.00 | Epsilon: 0.050
Episode 14/500 | Reward: 16.00 | Epsilon: 0.050
Episode 15/500 | Reward: -16.00 | Epsilon: 0.050
Episode 16/500 | Reward: -5.00 | Epsilon: 0.050
Episode 17/500 | Reward: -13.00 | Epsilon: 0.050
Episode 18/500 | Reward: -79.50 | Epsilon: 0.050
Episode 19/500 | Reward: -14.00 | Epsilon: 0.050
Episode 20/500 | Reward: -98.70 | Epsilon: 0.050
Episode 21/500 | Reward: -115.80 | Epsilon: 0.050
Episode 22/500 | Reward: -20.00 | Epsilon: 0.050
Episode 23/500 | Reward: -75.00 | Epsilon: 0.050
Episode 24/500 | Reward: 43.00 | Epsilon: 0.050
Episode 25/500 | Reward: -87.50 | Epsilon: 0.050
Episode 26/500 | Reward: 89.00 | Epsilon: 0.050
Episode 27/500 | Reward: -111.60 | Epsilon: 0.050
Episode 28/500 | Reward: 56.00 | Epsilon: 0.050
Episode 29/500 | Reward: -96.20 | Epsilon: 0.050
Episode 30/500 | Reward: -4.70 | Epsilon: 0.050
Episode 31/500 | Reward: 48.00 | Epsilon: 0.050
Episode 32/500 | Reward: -69.30 | Epsilon: 0.050
Episode 33/500 | Reward: 74.00 | Epsilon: 0.050
Episode 34/500 | Reward: -3.00 | Epsilon: 0.050
Episode 35/500 | Reward: 12.00 | Epsilon: 0.050
Episode 36/500 | Reward: 42.00 | Epsilon: 0.050
Episode 37/500 | Reward: 23.00 | Epsilon: 0.050
Episode 38/500 | Reward: 24.00 | Epsilon: 0.050
Episode 39/500 | Reward: 27.00 | Epsilon: 0.050
Episode 40/500 | Reward: 140.00 | Epsilon: 0.050
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Episode 40/500 | Reward: 140.00 | Epsilon: 0.050
Episode 41/500 | Reward: 12.00 | Epsilon: 0.050
Episode 42/500 | Reward: 108.00 | Epsilon: 0.050
Episode 43/500 | Reward: 100.00 | Epsilon: 0.050
Episode 44/500 | Reward: 145.00 | Epsilon: 0.050
Episode 45/500 | Reward: 126.00 | Epsilon: 0.050
Episode 46/500 | Reward: 158.00 | Epsilon: 0.050
Episode 47/500 | Reward: 60.00 | Epsilon: 0.050
Episode 48/500 | Reward: 181.00 | Epsilon: 0.050
Episode 49/500 | Reward: 119.00 | Epsilon: 0.050
Episode 50/500 | Reward: 53.00 | Epsilon: 0.050
Episode 51/500 | Reward: 40.00 | Epsilon: 0.050
Episode 52/500 | Reward: 113.00 | Epsilon: 0.050
Episode 53/500 | Reward: 54.00 | Epsilon: 0.050
Episode 54/500 | Reward: 180.00 | Epsilon: 0.050
Episode 55/500 | Reward: 51.00 | Epsilon: 0.050
Episode 56/500 | Reward: 60.00 | Epsilon: 0.050
Episode 57/500 | Reward: 37.00 | Epsilon: 0.050
Episode 58/500 | Reward: 74.00 | Epsilon: 0.050
Episode 59/500 | Reward: 44.00 | Epsilon: 0.050
Episode 60/500 | Reward: -74.80 | Epsilon: 0.050
Episode 61/500 | Reward: 134.00 | Epsilon: 0.050
Episode 62/500 | Reward: 126.00 | Epsilon: 0.050
Episode 63/500 | Reward: 59.00 | Epsilon: 0.050
Episode 64/500 | Reward: 96.00 | Epsilon: 0.050
Episode 65/500 | Reward: 105.00 | Epsilon: 0.050
Episode 66/500 | Reward: 150.00 | Epsilon: 0.050
Episode 67/500 | Reward: 141.00 | Epsilon: 0.050
Episode 68/500 | Reward: 164.00 | Epsilon: 0.050
Episode 69/500 | Reward: 173.00 | Epsilon: 0.050
Episode 70/500 | Reward: 195.00 | Epsilon: 0.050
Episode 71/500 | Reward: 107.00 | Epsilon: 0.050
Episode 72/500 | Reward: 175.00 | Epsilon: 0.050
Episode 73/500 | Reward: 155.00 | Epsilon: 0.050
Episode 74/500 | Reward: 152.00 | Epsilon: 0.050
Episode 75/500 | Reward: 38.00 | Epsilon: 0.050
Episode 76/500 | Reward: 156.00 | Epsilon: 0.050
Episode 77/500 | Reward: -53.40 | Epsilon: 0.050
Episode 78/500 | Reward: 175.00 | Epsilon: 0.050
Episode 79/500 | Reward: 149.00 | Epsilon: 0.050
Episode 80/500 | Reward: 109.00 | Epsilon: 0.050
Episode 81/500 | Reward: -113.60 | Epsilon: 0.050
Episode 82/500 | Reward: 131.00 | Epsilon: 0.050
Episode 83/500 | Reward: 147.00 | Epsilon: 0.050
Episode 84/500 | Reward: 49.00 | Epsilon: 0.050
Episode 85/500 | Reward: 160.00 | Epsilon: 0.050
Episode 86/500 | Reward: 170.00 | Epsilon: 0.050
Episode 87/500 | Reward: 147.00 | Epsilon: 0.050
Episode 88/500 | Reward: 66.00 | Epsilon: 0.050
Episode 89/500 | Reward: 152.00 | Epsilon: 0.050
Episode 90/500 | Reward: 176.00 | Epsilon: 0.050
Episode 91/500 | Reward: 144.00 | Epsilon: 0.050
Episode 92/500 | Reward: 134.00 | Epsilon: 0.050
Episode 93/500 | Reward: 159.00 | Epsilon: 0.050
Episode 94/500 | Reward: 95.00 | Epsilon: 0.050
Episode 95/500 | Reward: 64.00 | Epsilon: 0.050
Episode 96/500 | Reward: 164.00 | Epsilon: 0.050
Episode 97/500 | Reward: 160.00 | Epsilon: 0.050
Episode 98/500 | Reward: 129.00 | Epsilon: 0.050
Episode 99/500 | Reward: 164.00 | Epsilon: 0.050
Episode 100/500 | Reward: 162.00 | Epsilon: 0.050
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Episode 101/500 | Reward: 176.00 | Epsilon: 0.050
Episode 102/500 | Reward: 173.00 | Epsilon: 0.050
Episode 103/500 | Reward: 122.00 | Epsilon: 0.050
Episode 104/500 | Reward: 196.00 | Epsilon: 0.050
Episode 105/500 | Reward: -49.00 | Epsilon: 0.050
Episode 106/500 | Reward: 104.00 | Epsilon: 0.050
Episode 107/500 | Reward: 11.00 | Epsilon: 0.050
Episode 108/500 | Reward: 132.00 | Epsilon: 0.050
Episode 109/500 | Reward: 162.00 | Epsilon: 0.050
Episode 110/500 | Reward: 220.00 | Epsilon: 0.050
Episode 111/500 | Reward: 43.00 | Epsilon: 0.050
Episode 112/500 | Reward: 133.00 | Epsilon: 0.050
Episode 113/500 | Reward: 55.00 | Epsilon: 0.050
Episode 114/500 | Reward: 52.00 | Epsilon: 0.050
Episode 115/500 | Reward: 79.00 | Epsilon: 0.050
Episode 116/500 | Reward: 148.00 | Epsilon: 0.050
Episode 117/500 | Reward: 152.00 | Epsilon: 0.050
Episode 118/500 | Reward: 147.00 | Epsilon: 0.050
Episode 119/500 | Reward: 122.00 | Epsilon: 0.050
Episode 120/500 | Reward: 150.00 | Epsilon: 0.050
Episode 121/500 | Reward: 139.00 | Epsilon: 0.050
Episode 122/500 | Reward: -106.20 | Epsilon: 0.050
Episode 123/500 | Reward: 176.00 | Epsilon: 0.050
Episode 124/500 | Reward: 32.00 | Epsilon: 0.050
Episode 125/500 | Reward: 116.00 | Epsilon: 0.050
Episode 126/500 | Reward: 86.00 | Epsilon: 0.050
Episode 127/500 | Reward: 113.00 | Epsilon: 0.050
Episode 128/500 | Reward: 155.00 | Epsilon: 0.050
Episode 129/500 | Reward: 67.00 | Epsilon: 0.050
Episode 130/500 | Reward: 144.00 | Epsilon: 0.050
Episode 131/500 | Reward: 122.00 | Epsilon: 0.050
Episode 132/500 | Reward: 153.00 | Epsilon: 0.050
Episode 133/500 | Reward: 167.00 | Epsilon: 0.050
Episode 134/500 | Reward: 169.00 | Epsilon: 0.050
Episode 135/500 | Reward: 140.00 | Epsilon: 0.050
Episode 136/500 | Reward: 143.00 | Epsilon: 0.050
Episode 137/500 | Reward: 169.00 | Epsilon: 0.050
Episode 138/500 | Reward: 157.00 | Epsilon: 0.050
Episode 139/500 | Reward: 144.00 | Epsilon: 0.050
Episode 140/500 | Reward: 133.00 | Epsilon: 0.050
Episode 141/500 | Reward: 60.00 | Epsilon: 0.050
Episode 142/500 | Reward: 160.00 | Epsilon: 0.050
Episode 143/500 | Reward: 162.00 | Epsilon: 0.050
Episode 144/500 | Reward: 52.00 | Epsilon: 0.050
Episode 145/500 | Reward: 120.00 | Epsilon: 0.050
Episode 146/500 | Reward: 133.00 | Epsilon: 0.050
Episode 147/500 | Reward: 133.00 | Epsilon: 0.050
Episode 148/500 | Reward: 111.00 | Epsilon: 0.050
Episode 149/500 | Reward: 175.00 | Epsilon: 0.050
Episode 150/500 | Reward: 57.00 | Epsilon: 0.050
Episode 151/500 | Reward: 162.00 | Epsilon: 0.050
Episode 152/500 | Reward: 171.00 | Epsilon: 0.050
Episode 153/500 | Reward: 21.00 | Epsilon: 0.050
Episode 154/500 | Reward: 131.00 | Epsilon: 0.050
Episode 155/500 | Reward: 140.00 | Epsilon: 0.050
Episode 156/500 | Reward: 104.00 | Epsilon: 0.050
Episode 157/500 | Reward: 139.00 | Epsilon: 0.050
Episode 158/500 | Reward: 163.00 | Epsilon: 0.050
Episode 159/500 | Reward: 122.00 | Epsilon: 0.050
Episode 160/500 | Reward: 153.00 | Epsilon: 0.050
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Episode 161/500 | Reward: 164.00 | Epsilon: 0.050
Episode 162/500 | Reward: 101.00 | Epsilon: 0.050
Episode 163/500 | Reward: 122.00 | Epsilon: 0.050
Episode 164/500 | Reward: 137.00 | Epsilon: 0.050
Episode 165/500 | Reward: 114.00 | Epsilon: 0.050
Episode 166/500 | Reward: 130.00 | Epsilon: 0.050
Episode 167/500 | Reward: 102.00 | Epsilon: 0.050
Episode 168/500 | Reward: 153.00 | Epsilon: 0.050
Episode 169/500 | Reward: 96.00 | Epsilon: 0.050
Episode 170/500 | Reward: 113.00 | Epsilon: 0.050
Episode 171/500 | Reward: 167.00 | Epsilon: 0.050
Episode 172/500 | Reward: 105.00 | Epsilon: 0.050
Episode 173/500 | Reward: 134.00 | Epsilon: 0.050
Episode 174/500 | Reward: 152.00 | Epsilon: 0.050
Episode 175/500 | Reward: 144.00 | Epsilon: 0.050
Episode 176/500 | Reward: 155.00 | Epsilon: 0.050
Episode 177/500 | Reward: 169.00 | Epsilon: 0.050
Episode 178/500 | Reward: 134.00 | Epsilon: 0.050
Episode 179/500 | Reward: 123.00 | Epsilon: 0.050
Episode 180/500 | Reward: 134.00 | Epsilon: 0.050
Episode 181/500 | Reward: 170.00 | Epsilon: 0.050
Episode 182/500 | Reward: 185.00 | Epsilon: 0.050
Episode 183/500 | Reward: 147.00 | Epsilon: 0.050
Episode 184/500 | Reward: 132.00 | Epsilon: 0.050
Episode 185/500 | Reward: 171.00 | Epsilon: 0.050
Episode 186/500 | Reward: 163.00 | Epsilon: 0.050
Episode 187/500 | Reward: 175.00 | Epsilon: 0.050
Episode 188/500 | Reward: 140.00 | Epsilon: 0.050
Episode 189/500 | Reward: 112.00 | Epsilon: 0.050
Episode 190/500 | Reward: 119.00 | Epsilon: 0.050
Episode 191/500 | Reward: 154.00 | Epsilon: 0.050
Episode 192/500 | Reward: 153.00 | Epsilon: 0.050
Episode 193/500 | Reward: 152.00 | Epsilon: 0.050
Episode 194/500 | Reward: 130.00 | Epsilon: 0.050
Episode 195/500 | Reward: 98.00 | Epsilon: 0.050
Episode 196/500 | Reward: 121.00 | Epsilon: 0.050
Episode 197/500 | Reward: 141.00 | Epsilon: 0.050
Episode 198/500 | Reward: 91.00 | Epsilon: 0.050
Episode 199/500 | Reward: 138.00 | Epsilon: 0.050
Episode 200/500 | Reward: 165.00 | Epsilon: 0.050
Episode 201/500 | Reward: 163.00 | Epsilon: 0.050
Episode 202/500 | Reward: 137.00 | Epsilon: 0.050
Episode 203/500 | Reward: 165.00 | Epsilon: 0.050
Episode 204/500 | Reward: 105.00 | Epsilon: 0.050
Episode 205/500 | Reward: 69.00 | Epsilon: 0.050
Episode 206/500 | Reward: 125.00 | Epsilon: 0.050
Episode 207/500 | Reward: 133.00 | Epsilon: 0.050
Episode 208/500 | Reward: 135.00 | Epsilon: 0.050
Episode 209/500 | Reward: 149.00 | Epsilon: 0.050
Episode 210/500 | Reward: 102.00 | Epsilon: 0.050
Episode 211/500 | Reward: 163.00 | Epsilon: 0.050
Episode 212/500 | Reward: 137.00 | Epsilon: 0.050
Episode 213/500 | Reward: 166.00 | Epsilon: 0.050
Episode 214/500 | Reward: 75.00 | Epsilon: 0.050
Episode 215/500 | Reward: 103.00 | Epsilon: 0.050
Episode 216/500 | Reward: 151.00 | Epsilon: 0.050
Episode 217/500 | Reward: 98.00 | Epsilon: 0.050
Episode 218/500 | Reward: 127.00 | Epsilon: 0.050
Episode 219/500 | Reward: 138.00 | Epsilon: 0.050
Episode 220/500 | Reward: 151.00 | Epsilon: 0.050
Episode 221/500 | Reward: 157.00 | Epsilon: 0.050
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Episode 222/500 | Reward: 114.00 | Epsilon: 0.050
Episode 223/500 | Reward: 164.00 | Epsilon: 0.050
Episode 224/500 | Reward: 111.00 | Epsilon: 0.050
Episode 225/500 | Reward: 163.00 | Epsilon: 0.050
Episode 226/500 | Reward: 96.00 | Epsilon: 0.050
Episode 227/500 | Reward: 150.00 | Epsilon: 0.050
Episode 228/500 | Reward: 95.00 | Epsilon: 0.050
Episode 229/500 | Reward: 122.00 | Epsilon: 0.050
Episode 230/500 | Reward: 156.00 | Epsilon: 0.050
Episode 231/500 | Reward: 145.00 | Epsilon: 0.050
Episode 232/500 | Reward: 144.00 | Epsilon: 0.050
Episode 233/500 | Reward: 193.00 | Epsilon: 0.050
Episode 234/500 | Reward: 141.00 | Epsilon: 0.050
Episode 235/500 | Reward: 141.00 | Epsilon: 0.050
Episode 236/500 | Reward: 114.00 | Epsilon: 0.050
Episode 237/500 | Reward: 214.00 | Epsilon: 0.050
Episode 238/500 | Reward: 167.00 | Epsilon: 0.050
Episode 239/500 | Reward: 132.00 | Epsilon: 0.050
Episode 240/500 | Reward: 164.00 | Epsilon: 0.050
Episode 241/500 | Reward: 155.00 | Epsilon: 0.050
Episode 242/500 | Reward: 36.00 | Epsilon: 0.050
Episode 243/500 | Reward: 162.00 | Epsilon: 0.050
Episode 244/500 | Reward: 153.00 | Epsilon: 0.050
Episode 245/500 | Reward: 92.00 | Epsilon: 0.050
Episode 246/500 | Reward: 95.00 | Epsilon: 0.050
Episode 247/500 | Reward: 134.00 | Epsilon: 0.050
Episode 248/500 | Reward: 102.00 | Epsilon: 0.050
Episode 249/500 | Reward: 167.00 | Epsilon: 0.050
Episode 250/500 | Reward: 146.00 | Epsilon: 0.050
Episode 251/500 | Reward: 148.00 | Epsilon: 0.050
Episode 252/500 | Reward: 156.00 | Epsilon: 0.050
Episode 253/500 | Reward: 131.00 | Epsilon: 0.050
Episode 254/500 | Reward: 146.00 | Epsilon: 0.050
Episode 255/500 | Reward: 171.00 | Epsilon: 0.050
Episode 256/500 | Reward: 159.00 | Epsilon: 0.050
Episode 257/500 | Reward: 148.00 | Epsilon: 0.050
Episode 258/500 | Reward: 139.00 | Epsilon: 0.050
Episode 259/500 | Reward: 164.00 | Epsilon: 0.050
Episode 260/500 | Reward: 156.00 | Epsilon: 0.050
Episode 261/500 | Reward: 165.00 | Epsilon: 0.050
Episode 262/500 | Reward: 138.00 | Epsilon: 0.050
Episode 263/500 | Reward: 161.00 | Epsilon: 0.050
Episode 264/500 | Reward: 159.00 | Epsilon: 0.050
Episode 265/500 | Reward: 129.00 | Epsilon: 0.050
Episode 266/500 | Reward: 163.00 | Epsilon: 0.050
Episode 267/500 | Reward: 140.00 | Epsilon: 0.050
Episode 268/500 | Reward: 145.00 | Epsilon: 0.050
Episode 269/500 | Reward: 149.00 | Epsilon: 0.050
Episode 270/500 | Reward: 141.00 | Epsilon: 0.050
Episode 271/500 | Reward: 170.00 | Epsilon: 0.050
Episode 272/500 | Reward: 119.00 | Epsilon: 0.050
Episode 273/500 | Reward: 124.00 | Epsilon: 0.050
Episode 274/500 | Reward: 107.00 | Epsilon: 0.050
Episode 275/500 | Reward: 161.00 | Epsilon: 0.050
Episode 276/500 | Reward: 152.00 | Epsilon: 0.050
Episode 277/500 | Reward: 204.00 | Epsilon: 0.050
Episode 278/500 | Reward: 119.00 | Epsilon: 0.050
Episode 279/500 | Reward: 151.00 | Epsilon: 0.050
Episode 280/500 | Reward: 173.00 | Epsilon: 0.050
Episode 281/500 | Reward: 162.00 | Epsilon: 0.050
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Episode 282/500 | Reward: 136.00 | Epsilon: 0.050
Episode 283/500 | Reward: 150.00 | Epsilon: 0.050
Episode 284/500 | Reward: 150.00 | Epsilon: 0.050
Episode 285/500 | Reward: 142.00 | Epsilon: 0.050
Episode 286/500 | Reward: 149.00 | Epsilon: 0.050
Episode 287/500 | Reward: 87.00 | Epsilon: 0.050
Episode 288/500 | Reward: 137.00 | Epsilon: 0.050
Episode 289/500 | Reward: 146.00 | Epsilon: 0.050
Episode 290/500 | Reward: 138.00 | Epsilon: 0.050
Episode 291/500 | Reward: 148.00 | Epsilon: 0.050
Episode 292/500 | Reward: 143.00 | Epsilon: 0.050
Episode 293/500 | Reward: 199.00 | Epsilon: 0.050
Episode 294/500 | Reward: 172.00 | Epsilon: 0.050
Episode 295/500 | Reward: 128.00 | Epsilon: 0.050
Episode 296/500 | Reward: 172.00 | Epsilon: 0.050
Episode 297/500 | Reward: 131.00 | Epsilon: 0.050
Episode 298/500 | Reward: 162.00 | Epsilon: 0.050
Episode 299/500 | Reward: 153.00 | Epsilon: 0.050
Episode 300/500 | Reward: 107.00 | Epsilon: 0.050
Episode 301/500 | Reward: 114.00 | Epsilon: 0.050
Episode 302/500 | Reward: 169.00 | Epsilon: 0.050
Episode 303/500 | Reward: 135.00 | Epsilon: 0.050
Episode 304/500 | Reward: 163.00 | Epsilon: 0.050
Episode 305/500 | Reward: 128.00 | Epsilon: 0.050
Episode 306/500 | Reward: 167.00 | Epsilon: 0.050
Episode 307/500 | Reward: -102.30 | Epsilon: 0.050
Episode 308/500 | Reward: 174.00 | Epsilon: 0.050
Episode 309/500 | Reward: 174.00 | Epsilon: 0.050
Episode 310/500 | Reward: -40.40 | Epsilon: 0.050
Episode 311/500 | Reward: 175.00 | Epsilon: 0.050
Episode 312/500 | Reward: 156.00 | Epsilon: 0.050
Episode 313/500 | Reward: 153.00 | Epsilon: 0.050
Episode 314/500 | Reward: 173.00 | Epsilon: 0.050
Episode 315/500 | Reward: 164.00 | Epsilon: 0.050
Episode 316/500 | Reward: 159.00 | Epsilon: 0.050
Episode 317/500 | Reward: 174.00 | Epsilon: 0.050
Episode 318/500 | Reward: 167.00 | Epsilon: 0.050
Episode 319/500 | Reward: 145.00 | Epsilon: 0.050
Episode 320/500 | Reward: 125.00 | Epsilon: 0.050
Episode 321/500 | Reward: 166.00 | Epsilon: 0.050
Episode 322/500 | Reward: 148.00 | Epsilon: 0.050
Episode 323/500 | Reward: -5.30 | Epsilon: 0.050
Episode 324/500 | Reward: 180.00 | Epsilon: 0.050
Episode 325/500 | Reward: 180.00 | Epsilon: 0.050
Episode 326/500 | Reward: 133.00 | Epsilon: 0.050
Episode 327/500 | Reward: 182.00 | Epsilon: 0.050
Episode 328/500 | Reward: 167.00 | Epsilon: 0.050
Episode 329/500 | Reward: 144.00 | Epsilon: 0.050
Episode 330/500 | Reward: 167.00 | Epsilon: 0.050
Episode 331/500 | Reward: 150.00 | Epsilon: 0.050
Episode 332/500 | Reward: 161.00 | Epsilon: 0.050
Episode 333/500 | Reward: 169.00 | Epsilon: 0.050
Episode 334/500 | Reward: 171.00 | Epsilon: 0.050
Episode 335/500 | Reward: 132.00 | Epsilon: 0.050
Episode 336/500 | Reward: 164.00 | Epsilon: 0.050
Episode 337/500 | Reward: 155.00 | Epsilon: 0.050
Episode 338/500 | Reward: 165.00 | Epsilon: 0.050
Episode 339/500 | Reward: 175.00 | Epsilon: 0.050
Episode 340/500 | Reward: 155.00 | Epsilon: 0.050
Episode 341/500 | Reward: 176.00 | Epsilon: 0.050
Episode 342/500 | Reward: 150.00 | Epsilon: 0.050
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Episode 342/500  | Reward: 130.00  | Epsilon: 0.050
Episode 343/500  | Reward: 164.00  | Epsilon: 0.050
Episode 344/500  | Reward: 145.00  | Epsilon: 0.050
Episode 345/500  | Reward: 96.00  | Epsilon: 0.050
Episode 346/500  | Reward: 172.00  | Epsilon: 0.050
Episode 347/500  | Reward: 167.00  | Epsilon: 0.050
Episode 348/500  | Reward: 156.00  | Epsilon: 0.050
Episode 349/500  | Reward: -68.00  | Epsilon: 0.050
Episode 350/500  | Reward: 139.00  | Epsilon: 0.050
Episode 351/500  | Reward: 155.00  | Epsilon: 0.050
Episode 352/500  | Reward: 174.00  | Epsilon: 0.050
Episode 353/500  | Reward: 17.00  | Epsilon: 0.050
Episode 354/500  | Reward: 184.00  | Epsilon: 0.050
Episode 355/500  | Reward: 166.00  | Epsilon: 0.050
Episode 356/500  | Reward: 164.00  | Epsilon: 0.050
Episode 357/500  | Reward: 161.00  | Epsilon: 0.050
Episode 358/500  | Reward: 157.00  | Epsilon: 0.050
Episode 359/500  | Reward: 174.00  | Epsilon: 0.050
Episode 360/500  | Reward: 151.00  | Epsilon: 0.050
Episode 361/500  | Reward: 168.00  | Epsilon: 0.050
Episode 362/500  | Reward: 149.00  | Epsilon: 0.050
Episode 363/500  | Reward: 162.00  | Epsilon: 0.050
Episode 364/500  | Reward: 155.00  | Epsilon: 0.050
Episode 365/500  | Reward: 155.00  | Epsilon: 0.050
Episode 366/500  | Reward: 75.00  | Epsilon: 0.050
Episode 367/500  | Reward: 160.00  | Epsilon: 0.050
Episode 368/500  | Reward: 165.00  | Epsilon: 0.050
Episode 369/500  | Reward: 135.00  | Epsilon: 0.050
Episode 370/500  | Reward: -37.00  | Epsilon: 0.050
Episode 371/500  | Reward: 170.00  | Epsilon: 0.050
Episode 372/500  | Reward: -97.80  | Epsilon: 0.050
Episode 373/500  | Reward: 154.00  | Epsilon: 0.050
Episode 374/500  | Reward: 115.00  | Epsilon: 0.050
Episode 375/500  | Reward: 169.00  | Epsilon: 0.050
Episode 376/500  | Reward: -107.80  | Epsilon: 0.050
Episode 377/500  | Reward: 53.00  | Epsilon: 0.050
Episode 378/500  | Reward: 83.00  | Epsilon: 0.050
Episode 379/500  | Reward: 166.00  | Epsilon: 0.050
Episode 380/500  | Reward: 152.00  | Epsilon: 0.050
Episode 381/500  | Reward: 163.00  | Epsilon: 0.050
Episode 382/500  | Reward: 183.00  | Epsilon: 0.050
Episode 383/500  | Reward: -109.60  | Epsilon: 0.050
Episode 384/500  | Reward: 171.00  | Epsilon: 0.050
Episode 385/500  | Reward: -66.00  | Epsilon: 0.050
Episode 386/500  | Reward: 168.00  | Epsilon: 0.050
Episode 387/500  | Reward: 158.00  | Epsilon: 0.050
Episode 388/500  | Reward: 162.00  | Epsilon: 0.050
Episode 389/500  | Reward: 149.00  | Epsilon: 0.050
Episode 390/500  | Reward: 167.00  | Epsilon: 0.050
Episode 391/500  | Reward: 148.00  | Epsilon: 0.050
Episode 392/500  | Reward: 168.00  | Epsilon: 0.050
Episode 393/500  | Reward: 159.00  | Epsilon: 0.050
Episode 394/500  | Reward: 160.00  | Epsilon: 0.050
Episode 395/500  | Reward: 130.00  | Epsilon: 0.050
Episode 396/500  | Reward: 163.00  | Epsilon: 0.050
Episode 397/500  | Reward: 124.00  | Epsilon: 0.050
Episode 398/500  | Reward: 169.00  | Epsilon: 0.050
Episode 399/500  | Reward: 160.00  | Epsilon: 0.050
Episode 400/500  | Reward: 151.00  | Epsilon: 0.050
Episode 401/500  | Reward: 167.00  | Epsilon: 0.050
Episode 402/500  | Reward: 158.00  | Epsilon: 0.050
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Episode 403/500 | Reward: -28.60 | Epsilon: 0.050
Episode 404/500 | Reward: -107.10 | Epsilon: 0.050
Episode 405/500 | Reward: 144.00 | Epsilon: 0.050
Episode 406/500 | Reward: 151.00 | Epsilon: 0.050
Episode 407/500 | Reward: 132.00 | Epsilon: 0.050
Episode 408/500 | Reward: 169.00 | Epsilon: 0.050
Episode 409/500 | Reward: 79.00 | Epsilon: 0.050
Episode 410/500 | Reward: 77.00 | Epsilon: 0.050
Episode 411/500 | Reward: 144.00 | Epsilon: 0.050
Episode 412/500 | Reward: 134.00 | Epsilon: 0.050
Episode 413/500 | Reward: -104.80 | Epsilon: 0.050
Episode 414/500 | Reward: 58.00 | Epsilon: 0.050
Episode 415/500 | Reward: -100.00 | Epsilon: 0.050
Episode 416/500 | Reward: 40.00 | Epsilon: 0.050
Episode 417/500 | Reward: -10.00 | Epsilon: 0.050
Episode 418/500 | Reward: 94.00 | Epsilon: 0.050
Episode 419/500 | Reward: 13.00 | Epsilon: 0.050
Episode 420/500 | Reward: -80.70 | Epsilon: 0.050
Episode 421/500 | Reward: 160.00 | Epsilon: 0.050
Episode 422/500 | Reward: -52.00 | Epsilon: 0.050
Episode 423/500 | Reward: -12.60 | Epsilon: 0.050
Episode 424/500 | Reward: 125.00 | Epsilon: 0.050
Episode 425/500 | Reward: -65.40 | Epsilon: 0.050
Episode 426/500 | Reward: 78.00 | Epsilon: 0.050
Episode 427/500 | Reward: -106.90 | Epsilon: 0.050
Episode 428/500 | Reward: 166.00 | Epsilon: 0.050
Episode 429/500 | Reward: 171.00 | Epsilon: 0.050
Episode 430/500 | Reward: 53.00 | Epsilon: 0.050
Episode 431/500 | Reward: -114.30 | Epsilon: 0.050
Episode 432/500 | Reward: 173.00 | Epsilon: 0.050
Episode 433/500 | Reward: 181.00 | Epsilon: 0.050
Episode 434/500 | Reward: 160.00 | Epsilon: 0.050
Episode 435/500 | Reward: 172.00 | Epsilon: 0.050
Episode 436/500 | Reward: 168.00 | Epsilon: 0.050
Episode 437/500 | Reward: 163.00 | Epsilon: 0.050
Episode 438/500 | Reward: 78.00 | Epsilon: 0.050
Episode 439/500 | Reward: 165.00 | Epsilon: 0.050
Episode 440/500 | Reward: 64.00 | Epsilon: 0.050
Episode 441/500 | Reward: 98.00 | Epsilon: 0.050
Episode 442/500 | Reward: 69.00 | Epsilon: 0.050
Episode 443/500 | Reward: 181.00 | Epsilon: 0.050
Episode 444/500 | Reward: 154.00 | Epsilon: 0.050
Episode 445/500 | Reward: 38.00 | Epsilon: 0.050
Episode 446/500 | Reward: -69.80 | Epsilon: 0.050
Episode 447/500 | Reward: 156.00 | Epsilon: 0.050
Episode 448/500 | Reward: 168.00 | Epsilon: 0.050
Episode 449/500 | Reward: 146.00 | Epsilon: 0.050
Episode 450/500 | Reward: 172.00 | Epsilon: 0.050
Episode 451/500 | Reward: 171.00 | Epsilon: 0.050
Episode 452/500 | Reward: 169.00 | Epsilon: 0.050
Episode 453/500 | Reward: 150.00 | Epsilon: 0.050
Episode 454/500 | Reward: 151.00 | Epsilon: 0.050
Episode 455/500 | Reward: 87.00 | Epsilon: 0.050
Episode 456/500 | Reward: 162.00 | Epsilon: 0.050
Episode 457/500 | Reward: 114.00 | Epsilon: 0.050
Episode 458/500 | Reward: 172.00 | Epsilon: 0.050
Episode 459/500 | Reward: 165.00 | Epsilon: 0.050
Episode 460/500 | Reward: 27.00 | Epsilon: 0.050
Episode 461/500 | Reward: 167.00 | Epsilon: 0.050
Episode 462/500 | Reward: 146.00 | Epsilon: 0.050
Episode 463/500 | Reward: 161.00 | Epsilon: 0.050
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Episode 463/500 | Reward: 101.00 | Epsilon: 0.050
Episode 464/500 | Reward: 41.00 | Epsilon: 0.050
Episode 465/500 | Reward: 128.00 | Epsilon: 0.050
Episode 466/500 | Reward: 172.00 | Epsilon: 0.050
Episode 467/500 | Reward: 159.00 | Epsilon: 0.050
Episode 468/500 | Reward: 184.00 | Epsilon: 0.050
Episode 469/500 | Reward: 159.00 | Epsilon: 0.050
Episode 470/500 | Reward: 162.00 | Epsilon: 0.050
Episode 471/500 | Reward: 133.00 | Epsilon: 0.050
Episode 472/500 | Reward: 144.00 | Epsilon: 0.050
Episode 473/500 | Reward: 126.00 | Epsilon: 0.050
Episode 474/500 | Reward: 128.00 | Epsilon: 0.050
Episode 475/500 | Reward: 153.00 | Epsilon: 0.050
Episode 476/500 | Reward: 127.00 | Epsilon: 0.050
Episode 477/500 | Reward: 168.00 | Epsilon: 0.050
Episode 478/500 | Reward: 175.00 | Epsilon: 0.050
Episode 479/500 | Reward: 173.00 | Epsilon: 0.050
Episode 480/500 | Reward: 162.00 | Epsilon: 0.050
Episode 481/500 | Reward: 132.00 | Epsilon: 0.050
Episode 482/500 | Reward: 164.00 | Epsilon: 0.050
Episode 483/500 | Reward: 177.00 | Epsilon: 0.050
Episode 484/500 | Reward: 63.00 | Epsilon: 0.050
Episode 485/500 | Reward: 170.00 | Epsilon: 0.050
Episode 486/500 | Reward: 148.00 | Epsilon: 0.050
Episode 487/500 | Reward: 160.00 | Epsilon: 0.050
Episode 488/500 | Reward: 157.00 | Epsilon: 0.050
Episode 489/500 | Reward: 61.00 | Epsilon: 0.050
Episode 490/500 | Reward: 82.00 | Epsilon: 0.050
Episode 491/500 | Reward: 155.00 | Epsilon: 0.050
Episode 492/500 | Reward: 164.00 | Epsilon: 0.050
Episode 493/500 | Reward: 132.00 | Epsilon: 0.050
Episode 494/500 | Reward: 159.00 | Epsilon: 0.050
Episode 495/500 | Reward: 166.00 | Epsilon: 0.050
Episode 496/500 | Reward: 163.00 | Epsilon: 0.050
Episode 497/500 | Reward: 164.00 | Epsilon: 0.050
Episode 498/500 | Reward: 163.00 | Epsilon: 0.050
Episode 499/500 | Reward: 167.00 | Epsilon: 0.050
Episode 500/500 | Reward: 159.00 | Epsilon: 0.050
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DQN vs Double DQN Learning Curves
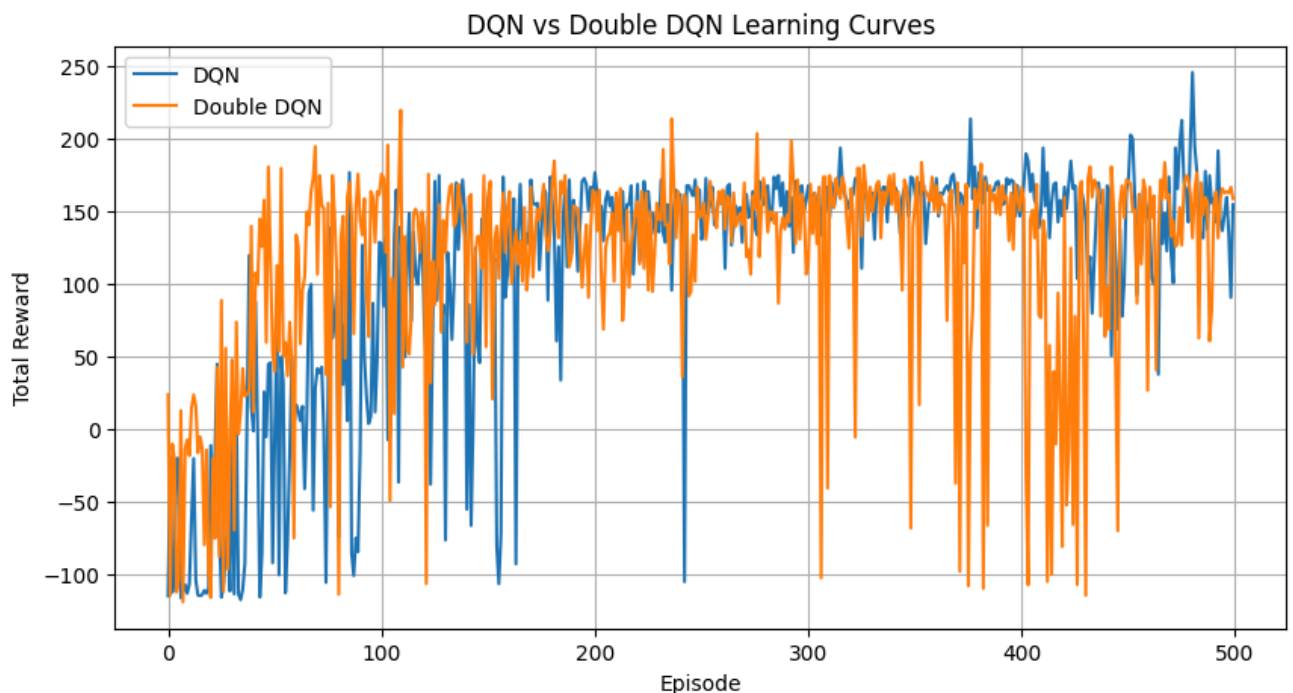
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Policy Analysis:
Final average reward (last 50 episodes) DQN: 152.340000000000054
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Final average reward (last 50 episodes) DQN: 152.34000000000054
Final average reward (last 50 episodes) DDQN: 144.84000000000054


Evaluating DQN agent on one episode...
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.87, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.94, POIs: 1
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Battery: 100.0%, Disturbance: 0.95, POIs: 1
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Battery: 100.0%, Disturbance: 0.95, POIs: 1
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Battery: 98.0%, Disturbance: 0.95, POIs: 1
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Battery: 96.1%, Disturbance: 0.95, POIs: 1
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Battery: 100.0%, Disturbance: 0.95, POIs: 1
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Battery: 100.0%, Disturbance: 0.95, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 1
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 99.0%, Disturbance: 1.00, POIs: 0
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Battery: 98.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 0.92, POIs: 0
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Battery: 100.0%, Disturbance: 1.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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Battery: 100.0%, Disturbance: 0.94, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.94, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.94, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.94, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.94, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.94, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
D
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 0
C D . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 99.0%, Disturbance: 0.96, POIs: 1
D . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 98.0%, Disturbance: 0.96, POIs: 1
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 1
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.96, POIs: 1
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. . . . . . . . . C
Battery: 99.0%, Disturbance: 0.96, POIs: 1
D . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 98.0%, Disturbance: 0.96, POIs: 1
D
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. . . . . . . . . C
Battery: 97.1%, Disturbance: 0.96, POIs: 1
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. . . . . . . . . C
Battery: 96.1%, Disturbance: 0.96, POIs: 1
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 95.1%, Disturbance: 0.96, POIs: 1
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 94.1%, Disturbance: 0.96, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 93.1%, Disturbance: 0.96, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
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. P . . . . . . P .
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. . . . . . . . . C
Battery: 92.2%, Disturbance: 0.96, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 91.2%, Disturbance: 0.96, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 90.2%, Disturbance: 0.88, POIs: 2
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. . . . . . . . P .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 89.3%, Disturbance: 0.88, POIs: 2
D . . . . . . . . .
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. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . C
Battery: 88.4%, Disturbance: 0.88, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
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. P . . . . . . . .
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. . . . . . . . . C
. . . . . . . . . C
Battery: 87.4%, Disturbance: 0.88, POIs: 2
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D . . . . . . . . .
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. . . . . . . . . C
Battery: 92.4%, Disturbance: 0.88, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 91.5%, Disturbance: 0.88, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . P .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 96.5%, Disturbance: 0.88, POIs: 2
D . . . . . . . . .
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P . . . . . . . . .
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. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 95.5%, Disturbance: 0.88, POIs: 3
D . . . . . . . . .
. . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 94.6%, Disturbance: 0.88, POIs: 3
D . . . . . . . . .
. . . . . . . . . .
P . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . . C
Battery: 93.7%, Disturbance: 0.88, POIs: 3
D . . . . . . . . .
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P . . . . . . . . .
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. . . . . . . . P .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 93.0%, Disturbance: 0.88, POIs: 3
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 92.1%, Disturbance: 0.88, POIs: 3
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 91.1%, Disturbance: 0.88, POIs: 3
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 90.2%, Disturbance: 0.88, POIs: 2
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . P . . . . . P .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 89.3%, Disturbance: 0.88, POIs: 2
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C . . . . . . . . C
D . . . . . . . . .
P . . . . . . . . .
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. . . . . . . . P .
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. . . . . . . . . C
Battery: 88.4%, Disturbance: 0.80, POIs: 2
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
. . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 87.5%, Disturbance: 0.80, POIs: 2
C . . . . . . . . .
D . . . . . . . . .
P . . . . . . . . .
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. . . . . . . . . C
Battery: 86.6%, Disturbance: 0.80, POIs: 1
C . . . . . . . . .
D . . . . . . . . .
P . P . . . . . . .
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. . . . . . . . . C
Battery: 85.7%, Disturbance: 0.80, POIs: 2
C . . . . . . . . .
D . . . . . . . . .
P . P . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 84.8%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . C
Battery: 83.9%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . C
Battery: 83.0%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 82.1%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
P . P . . . . . . .
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. . . . . . . . . C
Battery: 81.2%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 86.2%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
P . P . . . . . . .
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. . . . . . . . . C
Battery: 91.2%, Disturbance: 0.80, POIs: 2
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D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 96.2%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
P . P . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.80, POIs: 2
D . . . . . . . . .
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P . P . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
P . P . . . . . . .
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. . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
P . P . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . P . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
. . P . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . P . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 2
C . . . . . . . . .
D . . . . . . . P .
. . P . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 99.1%, Disturbance: 0.78, POIs: 2
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D . . . . . . . . .
. . . . . . . . P .
. . P . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 98.2%, Disturbance: 0.78, POIs: 2
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 99.1%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 98.2%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 97.3%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
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. . . . . . . . . C
Battery: 96.4%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 95.5%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 94.6%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 93.8%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 92.9%, Disturbance: 0.78, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 92.0%, Disturbance: 0.76, POIs: 1
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Battery: 91.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 91.1%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 90.2%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 89.3%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
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. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 88.5%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 93.5%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
. . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 98.5%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
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Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . P .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
C D . . . . . . . .
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. . . . . . . . . C
Battery: 99.1%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . C
Battery: 98.2%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 0
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . P . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
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Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
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. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
. . . . . P . . . .
. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.76, POIs: 1
DQN Evaluation Total Reward: 122.00

Evaluating Double DQN agent on one episode...
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.04, POIs: 0
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.04, POIs: 0
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.04, POIs: 0
C . . . . . . . . .
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 99.5%, Disturbance: 0.04, POIs: 0
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 99.0%, Disturbance: 0.03, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.03, POIs: 0
D . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.03, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.03, POIs: 0
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 0
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.00, POIs: 0
D . . . . . . . . .
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.10, POIs: 0
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Battery: 100.0%, Disturbance: 0.10, POIs: 0
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Battery: 100.0%, Disturbance: 0.10, POIs: 0
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Battery: 100.0%, Disturbance: 0.10, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.03, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 1
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Battery: 100.0%, Disturbance: 0.00, POIs: 1
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Battery: 100.0%, Disturbance: 0.00, POIs: 1
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Battery: 100.0%, Disturbance: 0.00, POIs: 1
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Battery: 100.0%, Disturbance: 0.00, POIs: 1
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.00, POIs: 0
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Battery: 100.0%, Disturbance: 0.02, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.05, POIs: 0
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Battery: 100.0%, Disturbance: 0.13, POIs: 0
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Battery: 100.0%, Disturbance: 0.13, POIs: 0
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Battery: 100.0%, Disturbance: 0.13, POIs: 0
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Battery: 100.0%, Disturbance: 0.13, POIs: 0
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Battery: 100.0%, Disturbance: 0.13, POIs: 0
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Battery: 100.0%, Disturbance: 0.18, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.20, POIs: 0
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Battery: 100.0%, Disturbance: 0.18, POIs: 0
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Battery: 100.0%, Disturbance: 0.18, POIs: 0
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Battery: 100.0%, Disturbance: 0.18, POIs: 0
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Battery: 100.0%, Disturbance: 0.18, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.12, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.12, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 99.8%, Disturbance: 0.06, POIs: 0
D . . . . . . . . .
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
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Battery: 100.0%, Disturbance: 0.06, POIs: 0
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.06, POIs: 0
D . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . .
. . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . . .
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. . . . . P . . . .
. . . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . . C
Battery: 99.5%, Disturbance: 0.10, POIs: 1
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Battery: 00.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . P . . . .
. . . . . P . . . .
. . . . . P . . . .
. . . . . P . . . .
. . . . . P . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.10, POIs: 1
D . . . . . . . . .
. . . . . . P . . . .
. . . . P . . . . .
. . . . . P . . . .
. . . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . P . . . .
. . . . P . . . . .
. . . . . P . . . .
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. . . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . P . . . . .
. . . . . P . . . .
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. . . . . . . . . . .
. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . . .
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. . . . . . . . . . C
Battery: 99.8%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . P . . . . .
. . . . . P . . . .
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. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . P . . . . .
. . . . . P . . . .
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. . . . . . . . . . C
. . . . . . . . . .
. . . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
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Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . P . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
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. . . . . P . . . .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 3
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
. . . . . P . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 3
D . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
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. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
. . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
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Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
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. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
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. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
. . . . . . . . . .
. . . . P . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 2
D . . . . . . . . .
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. . . . . . . . . .
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. . . . . . . . . .
. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
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. P . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 1
D . . . . . . . . .
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. . . . . . . . . .
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. . . . . . . . . .
. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 1
D . . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . .
. P . . . . . . . .
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. P . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
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Battery: 100.0%, Disturbance: 0.02, POIs: 1
D . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . .
. P . . . . . . . .
. . . . . . . . . .
. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 1
D . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 0
D . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 0
D . . . . . . . .
. . . . . . . . . .
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. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 0
D . . . . . . . .
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. . . . . . . . . .
. . . . . . . . . C
Battery: 100.0%, Disturbance: 0.02, POIs: 0
Double DQN Evaluation Total Reward: 175.00
```