PRIME
Predator-Prey Reinforcement Intelligent Model Engine

Model Simulation Report

Model Name: model_015

Date: 2025-01-24

Environment

Grid Side: Defines the size of one side of the grid, making it a square.
>20

Episodes: Total number of episodes to be executed in the simulation.
>10

Steps per Episode: Number of steps allowed in each simulation episode.
>20

Population

Initial Count: Specifies the initial number of agents at the start of the simulation.
>Predator: 10
>
>Prey: 20

Max Count: Defines the maximum number of agents allowed in the simulation.
>Predator: 1000
>
>Prey: 1000

Spawn Rate: Percentage chance of agent reproduction.
>Predator: 30%
>
>Prey: 80%

Step Decay: Amount of life points lost by agents for each step taken.
>Predator: 50%
>
>Prey: 60%

Neural Network

Learning Model: Specifies the type of learning model used by predator and prey agents in the simulation
>Predator: DOUBLE
>
>Prey: DOUBLE

Advanced Layer: Specifies any additional layers or network modifications used to enhance agent learning.
>Predator: RADAR
>
>Prey: RADAR

Quantitative Population Data

Predator Stats

	Reward	Done	Step
Mean	-2399.3831	21.6	19.0
Median	-2141.5415000000003	22.5	19.0
SD	1431.4035542280485	5.96992462263972	0.0
Max	-254.833	32	19
Min	-5309.333	11	19
Variance	2048916.1350566898	35.64	0.0
Range	5054.5	21	0
IRQ	1666.93725	5.5	0.0

Prey Stats

	Reward	Done	Step
Mean	-420.15	4.5	19.0
Median	-390.91650000000004	4.0	19.0
SD	230.32890685582652	2.80178514522438	0.0
Max	-130.0	9	19
Min	-841.667	0	19
Variance	53051.405333400005	7.85	0.0
Range	711.667	9	0
IRQ	404.54125	3.25	0.0

Behavior Data

Predator Behavior Stats

Prey Captured:	216
Nearby Prey:	1413
Exploring Map:	324

Prey Behavior Stats

Predator Escape:	45
Nearby Predator:	2166
Exploring Map:	379

Population Charts

Prey Count per Episode

Prey Count per Episode (Moving Average 25%)

Predator Count per Episode

Predator Count per Episode (Moving Average 25%)

Prey and Predator Count per Episode

Prey and Predator Count per Episode (Moving Average 25%)

Prey vs Predator Population

Prey vs Predator Population (Moving Average 25%)

Population Histogram of Prey and Predator

Box Plot of Prey and Predator Populations