Autonomous Agents 1
Assignment 1

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Implementation

The current implementation consists of the following classes:

Predator

Prey

Environment

Game

Analysis

Simulator for the environment

Avarage run time	Standard deviation
296 rounds	286.580390118

Iterative policy evaluation

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00335	0.8	33
(2, 3)	(5, 4)	0.19892	0.8	33
(2, 10)	(10, 0)	0.19892	0.8	33
(10, 10)	(0, 0)	1.65066	0.8	33

Discount Factor	Iterations to converge
0.1	5
0.5	13
0.7	22
0.9	64

Policy iteration

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00335	0.8	2
(2, 3)	(5, 4)	0.19892	0.8	2
(2, 10)	(10, 0)	0.19892	0.8	2
(10, 10)	(0, 0)	1.65066	0.8	2

Discount Factor	Iterations to converge
0.1	2
0.5	2
0.7	2
0.9	2

Value iteration

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00000	0.8	8
(2, 3)	(5, 4)	0.04096	0.8	8
(2, 10)	(10, 0)	0.00819	0.8	8
(10, 10)	(0, 0)	0.32000	0.8	8

Discount Factor	Iterations to converge
0.1	1
0.5	7
0.7	7
0.9	8

Smarter state-space encoding

Conclusion

Files attached

Sources