Risk Managment

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IDEA

An incident occurred in a construction site

Two workers noticed it

Should they leave their task and report it to their supervisor? or should they ignore it and continue working?

Problem Description:

We have a number of workers N, each worker chooses to report or don't report

Each worker choose their action, they get paid based on this payoff matrix

They choose their next action based on 2 strategies:

- PSO Social Learning
- Roth Erev Individual Learning

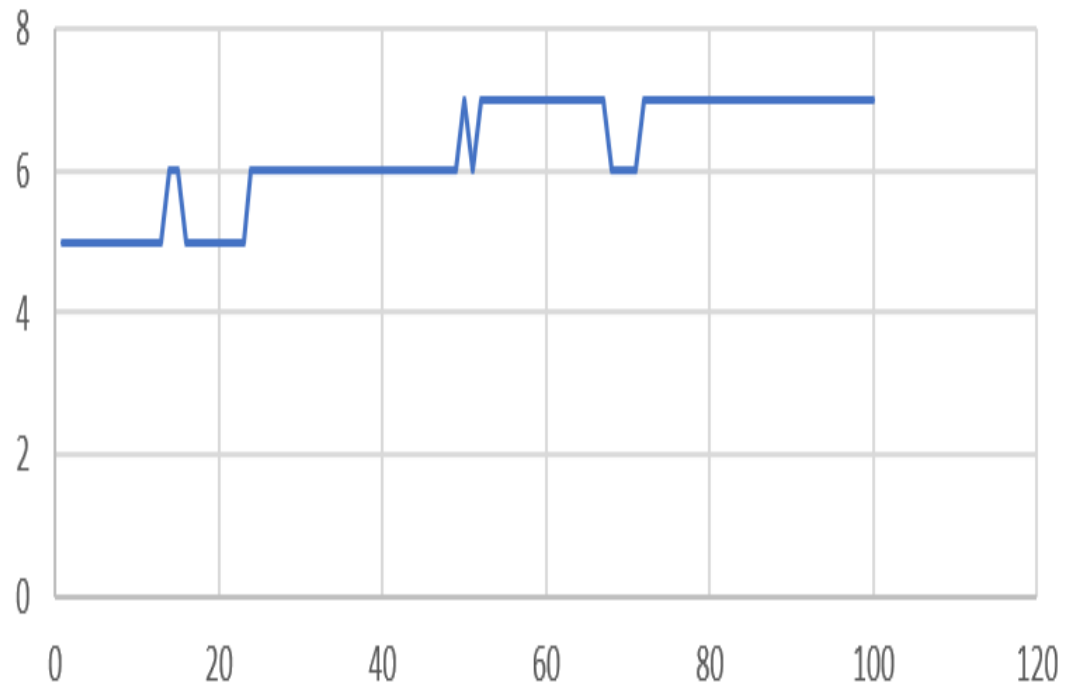|	Report	Don't report
Report	(R-C), (R-C)	(R-C), R
Don't report	R, (R-C)	0,0

We have 3 cases for their cost
- Case 1 (Reward =10, Cost =3)
- Case 2 (Reward =10, Cost = U (8->12))
- Case 3 (Reward =10, Cost = U (-3->-1))
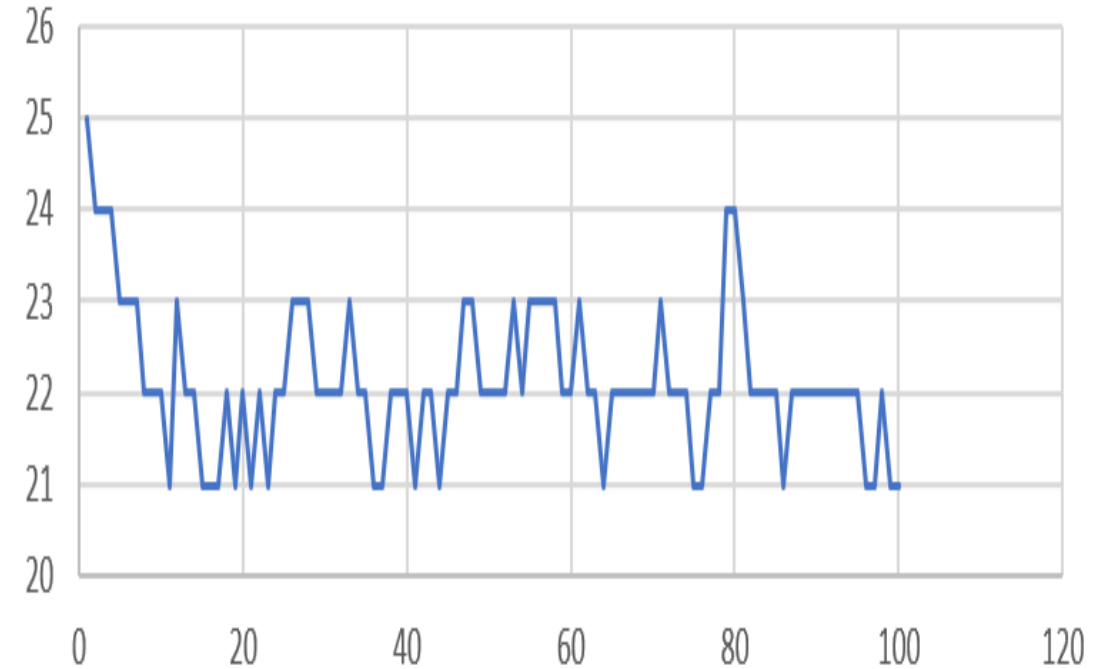
PSO Social Learning

Random Players

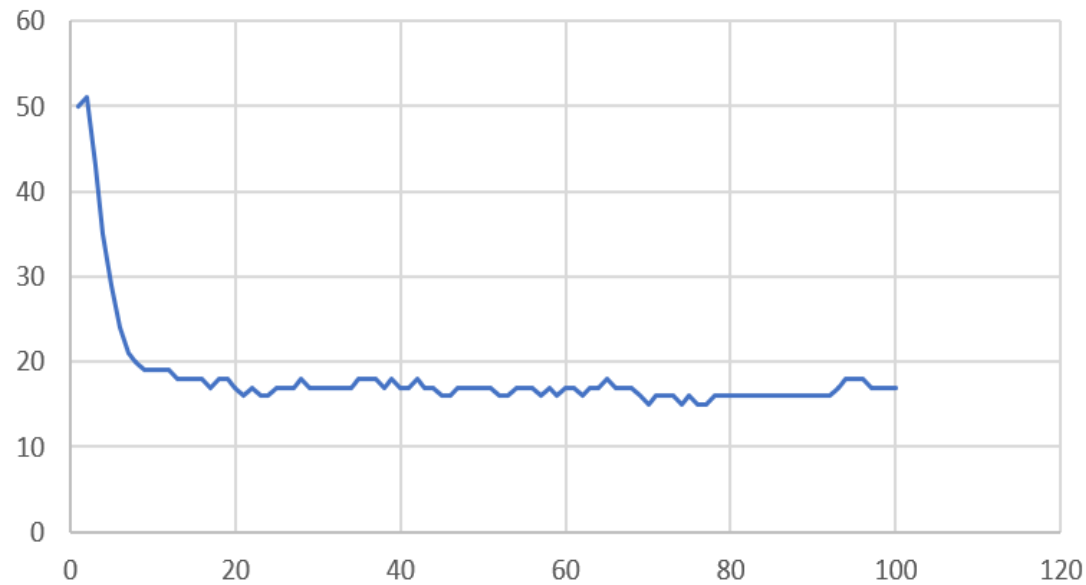CASE 1 (REWARD =10, COST =3)

CASE 1 (REWARD =10, COST =3)

10 Workers

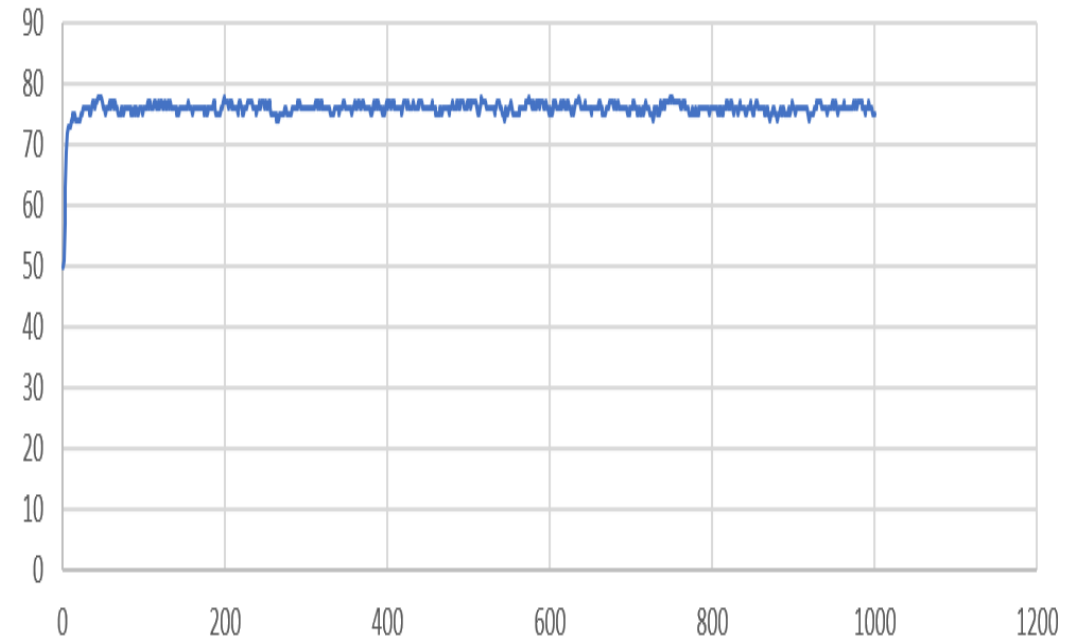50 Workers

PSO Social Learning

Random Players

CASE 2(REWARD =10, COST = U (8->12))   CASE 3 (REWARD =10, COST = U (-3->-1))

Number of workers had no impact   Number of workers had no impact
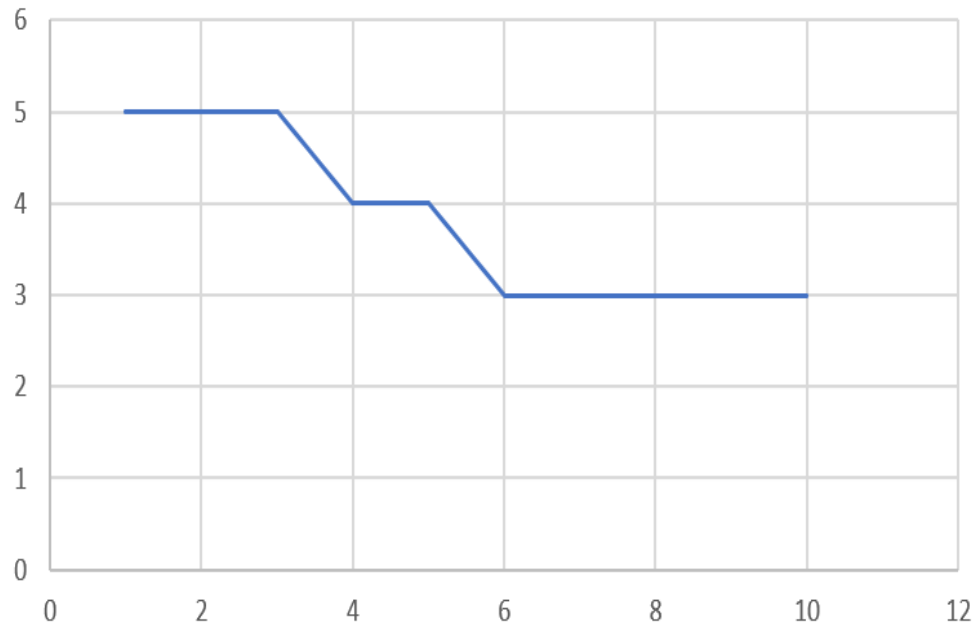
PSO Social Learning

Same Players

CASE 1 (REWARD =10, COST =3)

CASE 3 (REWARD =10, COST = U (-3->-1))

Number of workers had no impact

Number of workers had no impact
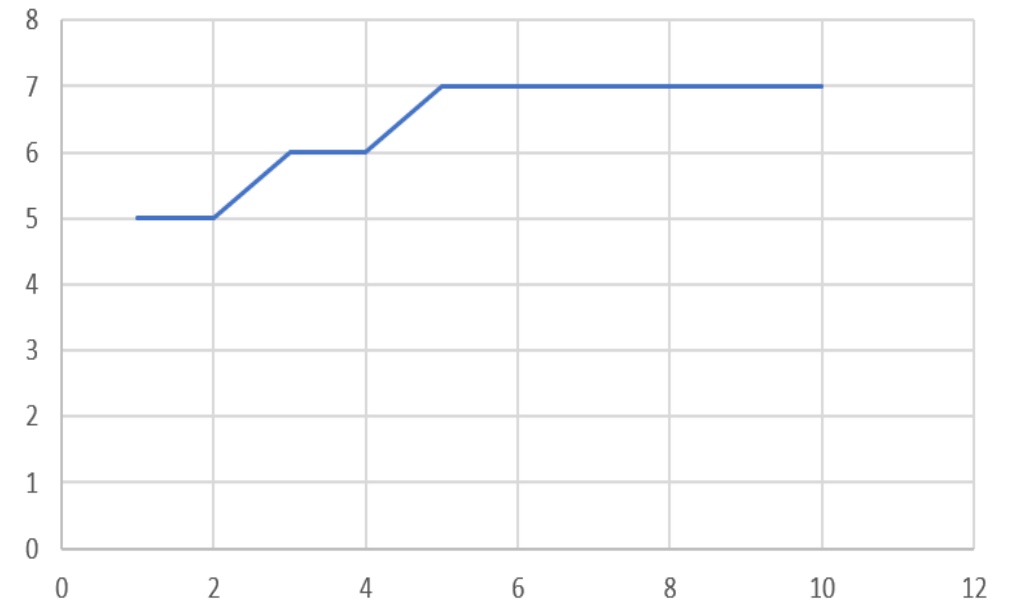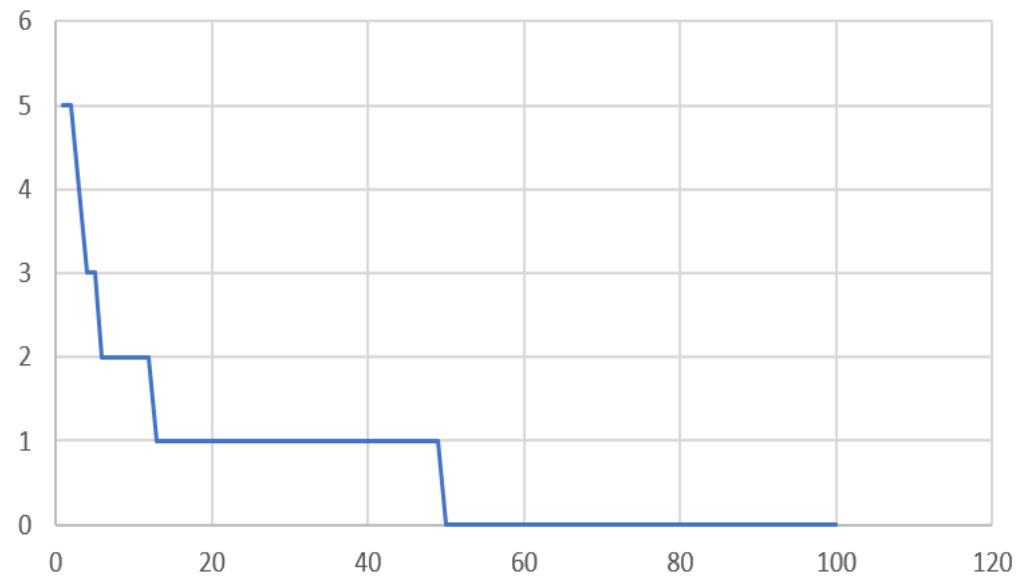
PSO Social Learning
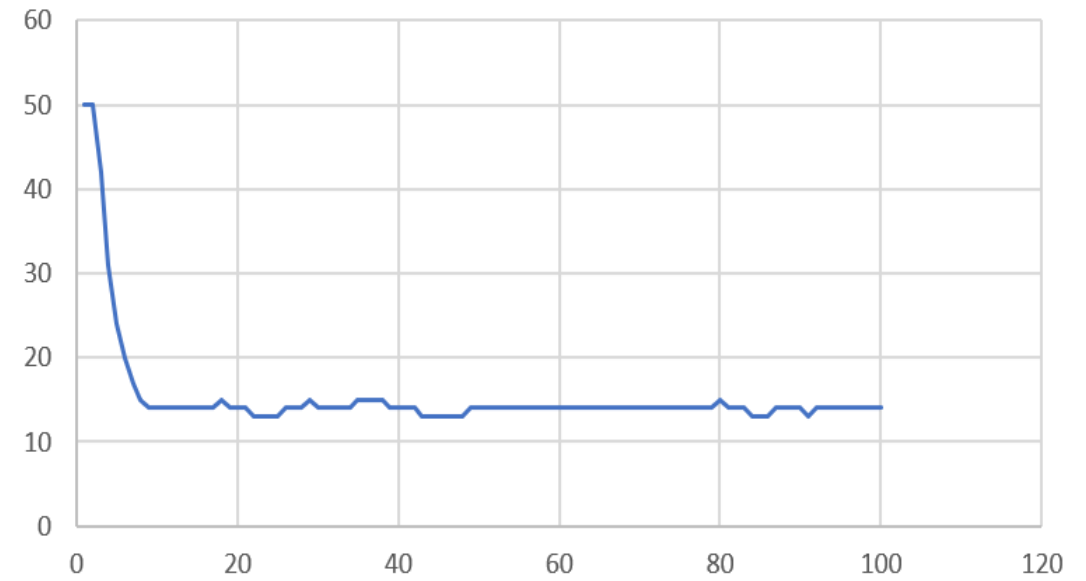
Same Players

CASE 2 (REWARD =10, COST = U (8->12))   CASE 2 (REWARD =10, COST = U (8->12))

10 Workers   100 workers

Roth Erev
Individual Learning

- Repeating the game between random players or same players had no impact
- Number of workers had no impact
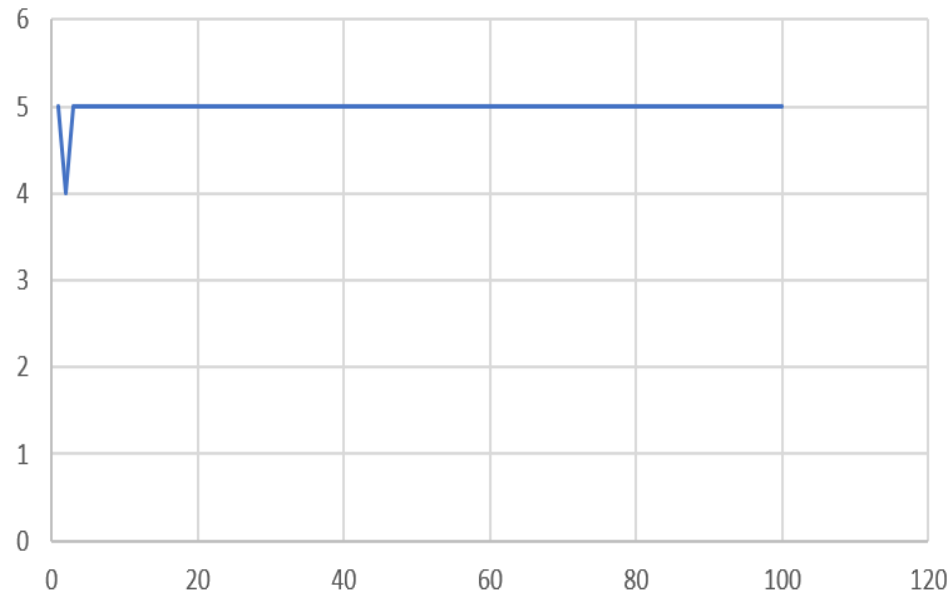- Any reward is sufficient for a player to stick to their action gaining confidence in the action and not changing it
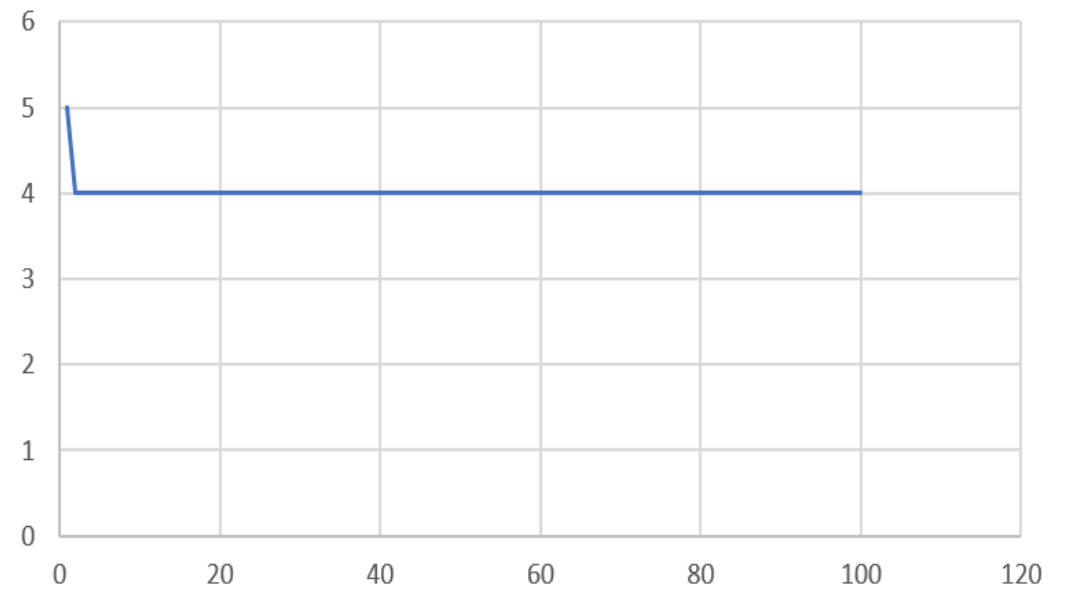
Roth Erev Individual Learning

CASE 1 (REWARD =10, COST =3)

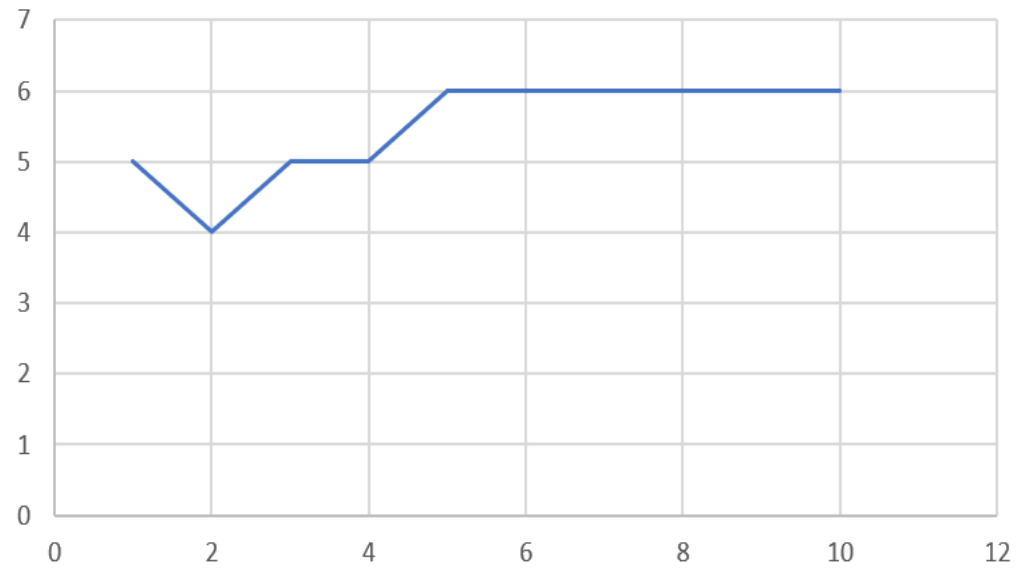10 workers

CASE 2 (REWARD =10, COST = U (8->12))

10 workers

Roth Erev Individual Learning

CASE 3 (REWARD =10, COST = U (-3->-1))

10 workers

Thank you

ANY QUESTION ?