

Negotiation Assignment

Akruti Kushwaha 201301137

Mounika Somisetty 201330076

Aim:

To beat Random Agents thereby getting maximum utility in a negotiation using the domain RentalHouse.

Implementation:

The Group10 Agent is implemented such that

- a) It carries out the accept action if the actions list of the Random Agents contains the best bid for it in itself
- b) Else it carries out the offer action with the best bid possible (*using the `getMaxUtilityBid()` function in `AbstractUtilitySpace` class*).

Result:

1)Negotiation with a Random Agent.

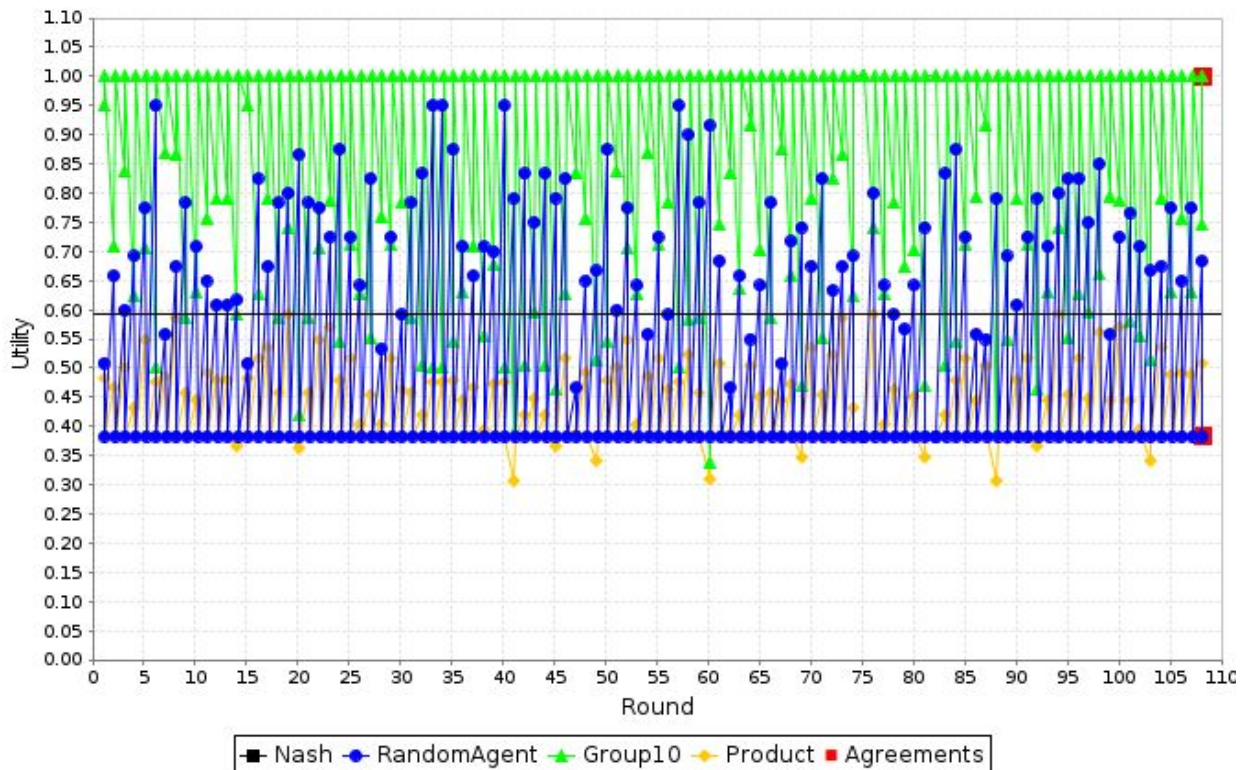
Discount Factor is 0.5

Reservation Value is 0.5

Found an agreement: Bid[price: 40000yen, Style: Western,
AcceptableLocations: NearToFukiageStation, WaterHeaterType: Gas,]
Finished negotiation session in 0.075s

Time (s):	0.074664119
Rounds:	109
Agreement?:	Yes
Discounted?:	Yes
Min. utility:	0.20531
Max. utility:	0.53558
Distance to pareto:	0.00000
Distance to Nash:	0.21573
Social welfare:	0.74089

Agent utility: 0.20531 (RandomAgent)
Agent utility: 0.53558 (Group10)



The graph above clearly shows that at each round, the utility of Group10 Agent was greater than that of the Random Agent. The final utility accepted also showcased that Group10 Agent immersed as the winner with the higher utility bid.

2) Negotiation with multiple Random Agents

Discount Factor is 0.5

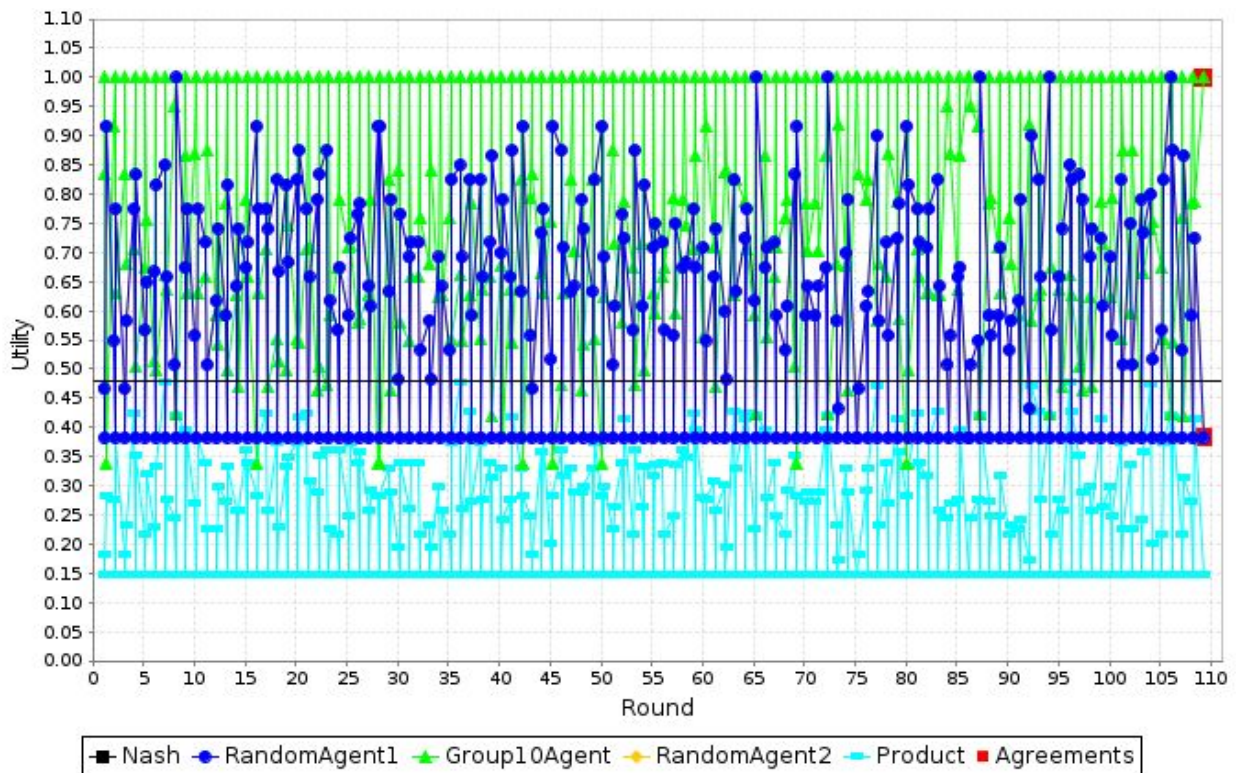
Reservation Value is 0.5

Found an agreement: Bid[price: 40000yen, Style: Western,
AcceptableLocations: NearToFukiageStation, WaterHeaterType: Gas,]
Finished negotiation session in 0.215s

Time (s): 0.215218394

Rounds: 110

Agreement?: Yes
 Discounted?: Yes
 Min. utility: 0.20413
 Max. utility: 0.53252
 Distance to pareto: 0.00000
 Distance to Nash: 0.33941
 Social welfare: 1.03177
 Agent utility: 0.20413 (RandomAgent1)
 Agent utility: 0.53252 (Group10Agent)
 Agent utility: 0.29512 (RandomAgent2)



Again like the first case, the graph above shows that at each round, the utility of Group10 Agent was greater than that of the Random Agents. The final utility accepted also showcased that Group10 Agent emerged as the winner with the higher utility bid.