QuickDecisionAgent for ANAC2024 SCML Agent Strategy

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1. Introduction

The goal was to challenge the Standard track with an agent created for the OneShottrack. However, it was modified to fit the Standard track. This agent inherits the SyncBetterAgent used for OneShotTrack.

2. Strategy

2.1. Proposal Strategy

Like the BetterSyncAgent, it distributes its current needs to all negotiators. However, unlike BetterSyncAgent, the distribution is not random. We adopted the following [A] proposed strategy.

[A] Even Proposal

Equally distribute the quantity demanded q among n counterparties. The quantity allocated to one counterparty will be $\left\lfloor \frac{q}{n} \right\rfloor$ or $\left(\left\lfloor \frac{q}{n} \right\rfloor + 1 \right)$.

By making an even proposal, the offer will be accepted without any difference in the nature of the counterparty.

Since the agent was created for OneShotTrack, the number of steps in the proposal is fixed at the current step. Also, the price is selected randomly.

2.2. Response Strategy

As with Better Agent, it calculates a power set of offers and selects a good combination among them. In this agent, the criteria for selecting combinations were changed.

In BetterSyncAgent, out of all the combinations, the one with the smallest difference between the needs and the total amount offered is selected and combined. On the other hand,

QuickDecisionAgent selects the combination that gets the highest utility value for that step. The agent's name is this because it does not do reject offers at all.

3. Evaluation

We tested QuickDecisionAgent in a simulations against *SyncRandomStdAgent, BetterSyncAgent, and ProactiveAgent.* The condition of the simulation are shown in Table 1.

Table1: The condition of simulations

Condition	Value
n_configs	10
n_steps	100

The results are shown in Table2. This result shows that QuickDecisionAgent is superior to all other agents, especially the original BetterSyngAnget.

Table2: The result of simulation

rank	Agent_type	Score
1	QuickDecisionAgent	0.909
2	BetterSyncAgent	0.835
3	SyncRandomStdAgent	0.333
4	ProactiveAgent	0.288

4. Reference

[1] Y.Mohammad, "Developing an agent for SCML2024 (OneShot) – A better SyncAgent". https://scml.readthedocs.io/en/latest/tutorials/02.develop_agent_scml2024_oneshot.html (accessed April 17)

[2]Y.Mohammad, "Developing an agent for SCML2024 (Standard)-A better SyncAgent" https://scml.readthedocs.io/en/latest/tutorials/04.develop_agent_scml2024_std.html (accessed April 17)