TripleE Agent Strategy

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# Introduction

The Automated Negotiating Agent Competition (ANAC) [1] is an international tournament that has been running since 2010 to bring together researchers from the negotiation community.

Our team took part in the Automated Negotiation League (ANL) of 2023 [2] , in which the task is to design a negotiation agent for bilateral negotiation that the bidding is by turn between the two agents. Each agent is allowed to save data on the opponent for learning purposes while the tournament progresses. The highest scoring agents based on individual utility and social welfare win.

# Design

In our agent we defined a time threshold to try and offer bids that are better for us than to the opponent (95% progress in the bidding strategy and 98% in the acceptance strategy).

For the social welfare part – if the negotiation has progressed 98% than the agent will receive every bid that the opponent will offer to make sure both parties in the negotiation will improve their total utility.

## Bidding Strategy

* + - When the agent is initialized, we perform sorting of all the possible bidding in the current negotiation according to the util received by each bid – and save it inside the agent.
    - In the first bid the agent needs to offer, he sends the best bid according to the sorting we've made.
    - In every turn the agent will offer a random bid between the best bid and the 10'th best bid in the list.
    - When the negotiation progressed to 95%, we offer the best bid we received from the opponent (we save from each opponent the best bid offered during the negotiation).

## Acceptance Strategy

* + - During the negotiation, the agent accepts only offers that are twice as good as the next bid the agent will offer to the opponent.
    - When the negotiation progressed to 98%, if the opponent offers a bid >= the reservation bid – we accept.

## Opponent Modeling

* + - For each opponent we save the best bidding he offered during the tournament, and we don't offer anything below this bid.

## Learning method

## TripleE agent does not apply any form of learning.

# Results

* While running a local tournament against \_\_ agents we download from the GitHub – our agent was \_\_ place, with average utility of \_\_\_ and social welfare of \_\_.
* SCREEN\_SHOT of the excel

# References

1. “14th Automated Negotiating Agents Competition (ANAC2023)”, http://web.tuat.ac.jp/~katfuji/ANAC2023/index.html
2. “Automated Negotiation League 2023”, https://github.com/brenting/ANL-2023-example-agent