ID2209
Assignment 2 - Agents and FIPA

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Species

Auctioneers

Implemented as the initiators of the FIPA protocol, They first inform the participants of the start of an auction with the help of the “inform” performative and utilize the contract-net-protocol to start calling for proposals (cfp’s) to the participants. After getting a response, they process the offer given to them in different ways depending on what type of auction they’re called for.

Participants

Participants are agents that listen to inform performatives and cfp performatives and respond in kind. They all each have their own price that represents their utilization and how each price changes each participant's strategy.

Implementation

For the dutch auction, we implemented the FIPA protocol with the help of the start_conversation function. By utilizing the contract-net protocol, the auctioneers start with a price that is generated as a pretty high one purposefully relative to the willing prices of the participants. The auctioneer sends his start_conversation signalling the beginning of the auction, and then proceeds to send cfps to all participants, where he also tells them his current price. The participants respond to the cfp with their own proposals with their suggestion of how much they can pay (this bid is the same during all rounds of the auction) and if one of the participants’ offer is higher or equal to the calling bid, the participant wins the bid. If he wins the bid he buys it for the called amount. If the calling bid turns out lower than the lowest price the auctioneer is willing to accept, the auction is cancelled and no one wins. If several participants are willing to buy for the same price, the first proposal in the proposal list wins.

Challenge 1

In this challenge we increased the number of available auctions to three, and they can have one of three themes, “signed socks, signed bags, signed shirts”. Each participant is interested in only one of these categories and will attend only the auctions that are of his preference. When the auctioneer sends out his start_conversation he includes a mention of the type of auction he is starting. The participants respond to this message, indicating

whether they are interested or not depending on their randomly generated interest of the available subjects. The auctioneer builds a list of attendees from the interested people, which are also the one he gives cfp messages to. From this point onwards the methodology follows the original implementation.

Challenge 2

In this challenge, we implemented two additional types of auctions. The sealed signed-bid type of auction and the japanese type of auction. When the auctioneer informed of the auction, they were also informed of what type of auction that would be picked. In the sealed-signed bid, we modified the contract to simply send out a proposal once. The participants each sent their bid, and the auctioneer picked the greatest bid of all these proposals and then simply announced the winner. In the Japanese auction, we made it so that the auctioneer sent out bids and the participants would reply true or false if they still wanted to stay in the auction. These participants would be put in a list. If they replied false, they were removed from the list and the bidding continued only with this new list instead, thus removing the participants unwilling to continue the bid.

Results

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(Time 71.0 ): Participant 4 receives a message from auctioneer with content ['Selling for price',2545]
Willing to buy for 5
Participant 4 rejects 2545
(Time 71.0 ): Participant 5 receives a message from auctioneer with content ['Selling for price',2545]
Willing to buy for 5
Participant 5 rejects 2545
Participant 1 has received a reject proposal for: ['Rejected price ',5]
Participant 2 has received a reject proposal for: ['Rejected price ',5]
Participant 3 has received a reject proposal for: ['Rejected price ',5]
Participant 4 has received a reject proposal for: ['Rejected price ',5]
Participant 5 has received a reject proposal for: ['Rejected price ',5]
new round of auction
(Time 75.0 ): Auctioneer sends a cfp message to all participants selling for 2045
(Time 76.0 ): Participant 1 receives a message from auctioneer with content ['Selling for price',2045]
Willing to buy for 5
Participant 1 rejects 2045
(Time 76.0 ): Participant 2 receives a message from auctioneer with content ['Selling for price',2045]
Willing to buy for 5
Participant 2 rejects 2045
(Time 76.0 ): Participant 3 receives a message from auctioneer with content ['Selling for price',2045]
Willing to buy for 5
Participant 3 rejects 2045
(Time 76.0 ): Participant 4 receives a message from auctioneer with content ['Selling for price',2045]
Willing to buy for 5
Participant 4 rejects 2045
(Time 76.0 ): Participant 5 receives a message from auctioneer with content ['Selling for price',2045]
Willing to buy for 5
Participant 5 rejects 2045
Participant 1 has received a reject proposal for: ['Rejected price ',5]
Participant 2 has received a reject proposal for: ['Rejected price ',5]
Participant 3 has received a reject proposal for: ['Rejected price ',5]
Participant 4 has received a reject proposal for: ['Rejected price ',5]
Participant 5 has received a reject proposal for: ['Rejected price ',5]
price is lower than floor, 1999, cancelling new auctions
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The results of this lab were shown through the GAMA logs. We could see that we got the right results by comparing what each participant would be willing to give and what the price was. Thus we always knew who would win and could see how the auctioneer behaved. As can be seen in the picture, we can see which participant received which message and if the price was rejected or not. In this picture the participants' bids were set low, so as to display the scenario where the bid was rejected.

Discussion/Conclusion

This assignment served as a good introduction to how the FIPA protocol works and helped us in understanding how the calls between different actors are performed.