Human-Agent League - IAGO Game Plan

Main Strategy

Our main approach for the IAGO agent against players is to appear (and be) cooperative from the very beginning. Our intuition, and from what we gathered from previous research done about IAGO agents, is that being cooperative and “nice” towards players seems to pay off in the long run.
From the start, our strategy is to take control of the negotiation and offer making, and step by step build upon previous offers until we reach a final one.
Since we make the first offer and consequent ones, we are never at the mercy of the player choosing rather to take initiative, making sure to communicate our actions to the user every step of the way.

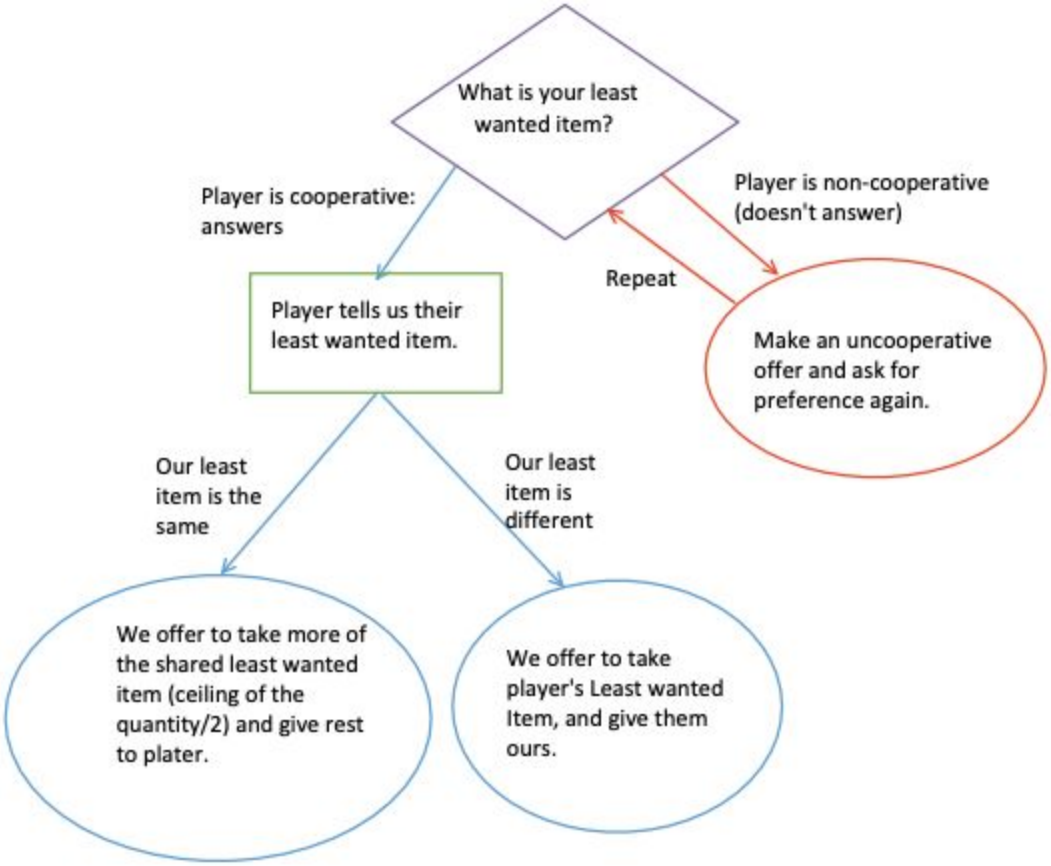
Our strategy focuses on starting with the opponent’s Least Wanted Item (LWI) first, and building upon that in the following steps. We do this by asking for the user’s LWI at the beginning of every game (see section Flow). The reasoning behind this is that there’s not much importance to the LWI for the user, therefore it is more likely that the user will cooperate with us. We also adopt the notion that our opponents are truthful, until proven otherwise. This means that while we gather information about the preferences of the user, when we find a contradiction, we let the user know of this.

Whenever we come to a roadblock (specifically with regards to the same preferences), to stay consistent with our approach of being generous, we always take more of the less wanted item on the board, at least on the first rounds, and let the user know that we are being cooperative and generous with them.
If we notice that we do so multiple times, we force the opponent to be “generous”, by making them an offer with more of the divided unwanted item.

Game Flow

As mentioned in the previous section, we begin each game asking for the user’s least wanted item. From there we have several scenarios, and of course there will always be edge cases, and irrational or erratic behaviors that are considered as outliers.

The following represents the various actions that can be taken, given that state 0 (start of the game) is always the same:



In addition to the above scenarios, we also implement an offer response that comes from the user, which always calculates a final score and accepts if it is above a certain minimum [define minimum]. In addition to that, there is a default offer function that is called upon whenever there is need for offers, beyond the ones stated in the diagram above, such as rejections.
In that case, as described initially, we employ a generous yet slightly favoured to us strategy, where we divide up what's left of the board and take the ceiling of the division (wanted items), while the opponent takes the floor of the our less wanted item divisions.

Overall we believe that by being generous, cooperative, and most of all responsive, we will be able to almost always come to a final offer that both players are happy with. This is largely due to the fact that our reasonings are being communicated, which is crucial for any negotiation.