

Fairness by Discussion

An alternative view on the fairness of protocols in automated negotiations.

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1 A Question

Automated negotiations can replace human-to-human negotiation in a variety of ways. Since these can carry high stakes, it is worth asking how we can make these systems fairer:

- Can the usage of arguments provide a way to improve fairness in automated negotiations?

Or more formally:

- Could **ABN** be used as an extension to **SAOP** (Baarslag et al., 2017) to improve **fairness** in automated negotiations?

Turtle

Hare

1 Tell me, Mr. Hare, what do you consider fair?

3 I could, but what good is small talk when there are so many interesting things to talk about?

5 Ah, how so?

7 I see. So you would say fairness is a good thing?

9 You will see, I don't think you should have any trouble keeping up with me.

2 Couldn't you have chosen any less loaded topic?

4 Fair point.

6 Well, you made a good point, so I respond accordingly.

8 Absolutely, but where are you going with this?

2 On Negotiations

- **Negotiation protocol**: the rules one follows in a negotiation.
- **SAOP**: Stacked Alternating Offers Protocol; one party initiates the negotiation by sending a bid. The other party can respond by accepting the offer or responding with a counter-offer (Baarslag et al., 2017).
- **ABN**: Argumentation-Based Negotiation; the inclusion of arguments in a negotiation. Employing arguments can give several benefits, but, most importantly, it gives insight into the motivations of the party providing the arguments.
- **Bilateral Negotiation**: A negotiation that happens directly between two parties.

3 Fairness and Computation

It is important to ask what exactly is fairness. In doing so, we can make two interesting observations:

- Fairness in computer science is rather homogeneous, mainly using 'computational' approaches to the topic.
- A lot of different opinions on fairness exist within philosophy and politics.

Computational approaches to fairness have their downsides: they often oversimplify and therefore fail in certain edge cases (Jacobs & Wallach, 2021).

- Using a non-computational approach to fairness could mitigate those problems.

4 Why We Can't Agree

On some topics, we cannot seem to agree. An answer to this is something Gallie called an **essentially contested concept**:

- The concept must signify value
- It has to be multidimensional, i.e. there are multiple factors that all contribute to something being regarded as the concept.
- it can only be *properly* defined in context (the definition must therefore refer to its contributions)
- be time and context-dependent, or, *open-ended*

Fairness is essentially contested.

Turtle

Hare

11 Then let me ask you: What do you consider relevant?

13 On what exactly?

15 I think you hit the nail on the head.

17 You said what is relevant to fairness depends on context. I think that is a good argument. Having context is vital to a good definition of fairness.

10 Very funny. I just don't understand how that is relevant to fairness.

12 I guess that depends.

14 On a lot of things: who your asking, when you're asking, where you're asking.

16 What nail? What head? I don't understand.

18 Well, I appreciate that.

Turtle

Hare

19 No problem, I enjoy a good discussion.

21 We both feel free to express our opinions as they are.

23 Maybe. I think that there is more to learn about one another and the topic at hand when you have an open discussion.

25 Exactly, so can you tell what I'm thinking?

27 That's rather disappointing.

29 Fair point.

20 What do you consider good about this discussion?

22 Does that mean that you wouldn't want to have discussion where you couldn't?

24 I see what you're saying. If the discussion is open, arguments provide a way to understand what the other is thinking

26 Of course not, I'm a hare not a psychic.

28 I wouldn't say so. It's more interesting not knowing everything.

5 Discussion is Necessary

When we consider fairness to be essentially contested, we draw some conclusions:

- For everyone involved in the definition of fairness (e.g. the users of the negotiator) to find a definition of 'fair', they all have to provide their context to the definition.
- This means that a discussion is necessary around a system to ensure it is fair.
- Making the discussion more 'open' (i.e. the opinions raised are taken into the definition) results in a fairer system.
- Inhibiting discussion in some way results in a more unfair system.

Discussion regarding a system is necessary for it to be fair

6 Arguments Drive Discussion

Arguments in automated negotiations provide a way to understand what the computer is thinking:

- They provide more information about the process of negotiation, adding context and thereby improving the definition of fairness for the users.
- By creating arguments that are accessible to non-experts, they allow more people to have an opinion on the fairness of the negotiation.

Including arguments provides more context and opens up the discussion regarding the fairness of a negotiation.

Thus, by adding arguments to SAOP we can improve the fairness of the negotiations that employ it.

References

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