Value Preferences Estimation and Disambiguation in Hybrid Participatory Systems

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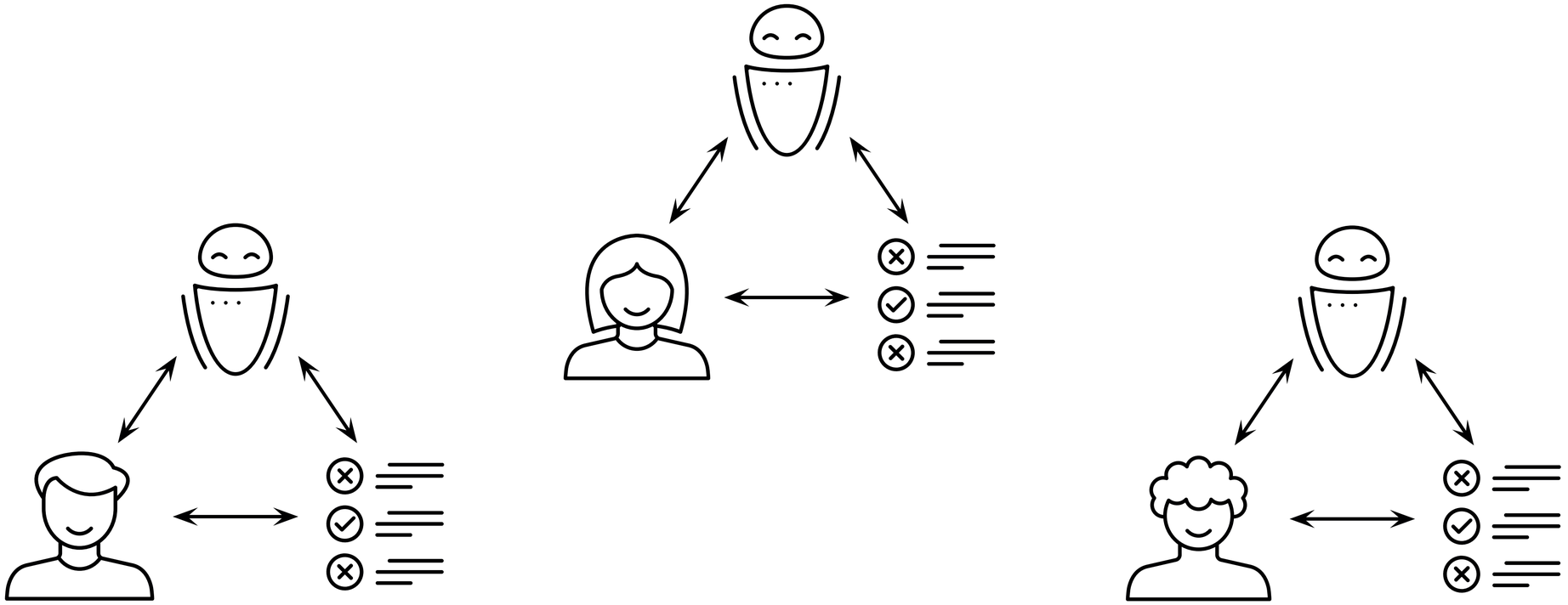
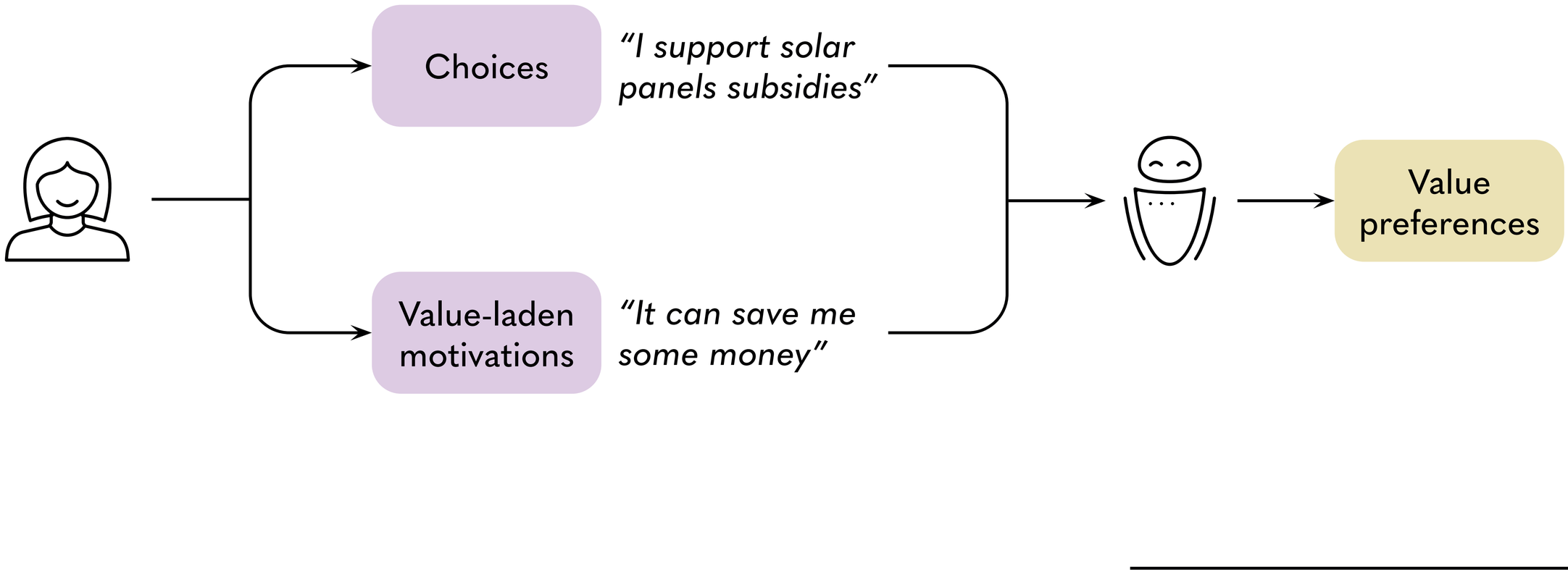
TU Delft Hybrid Intelligence AlgoSoc /

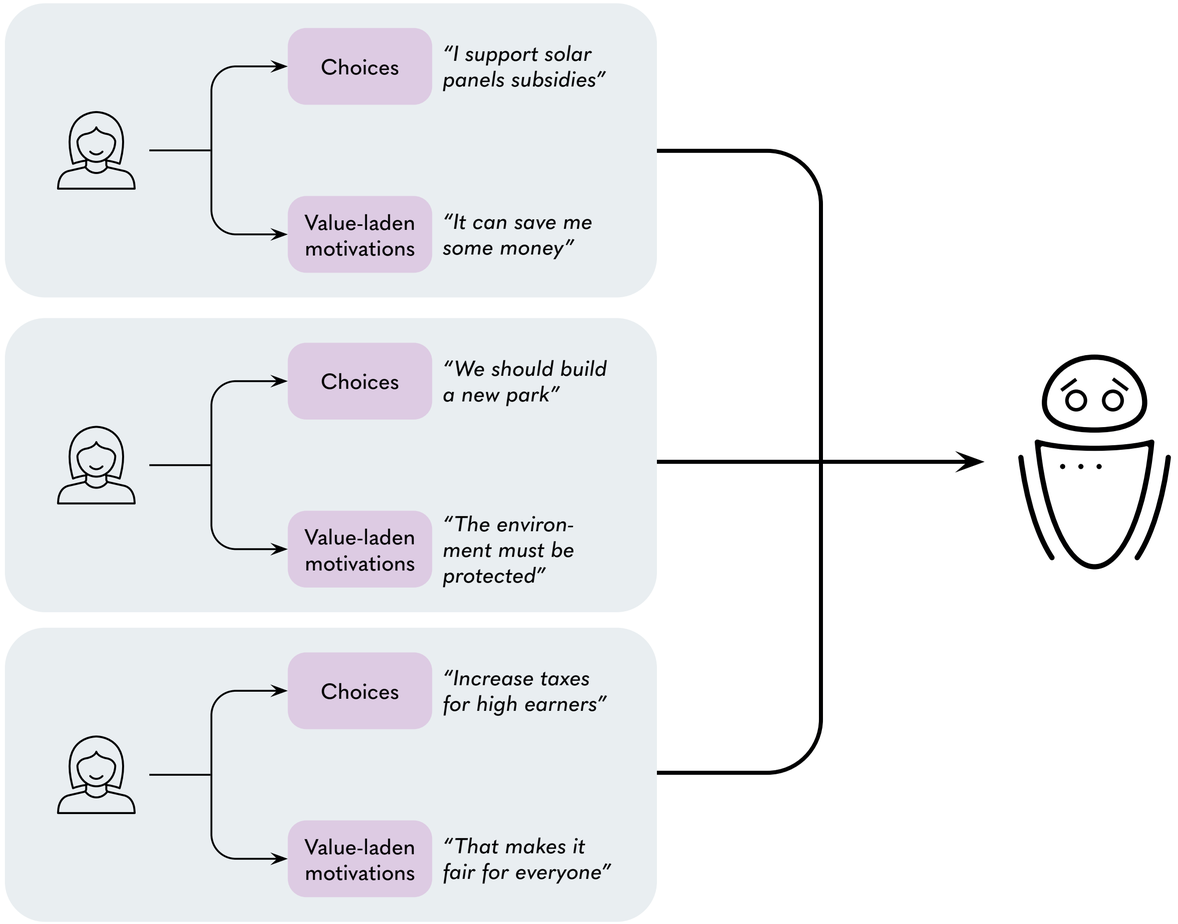
Hybrid Participatory Systems



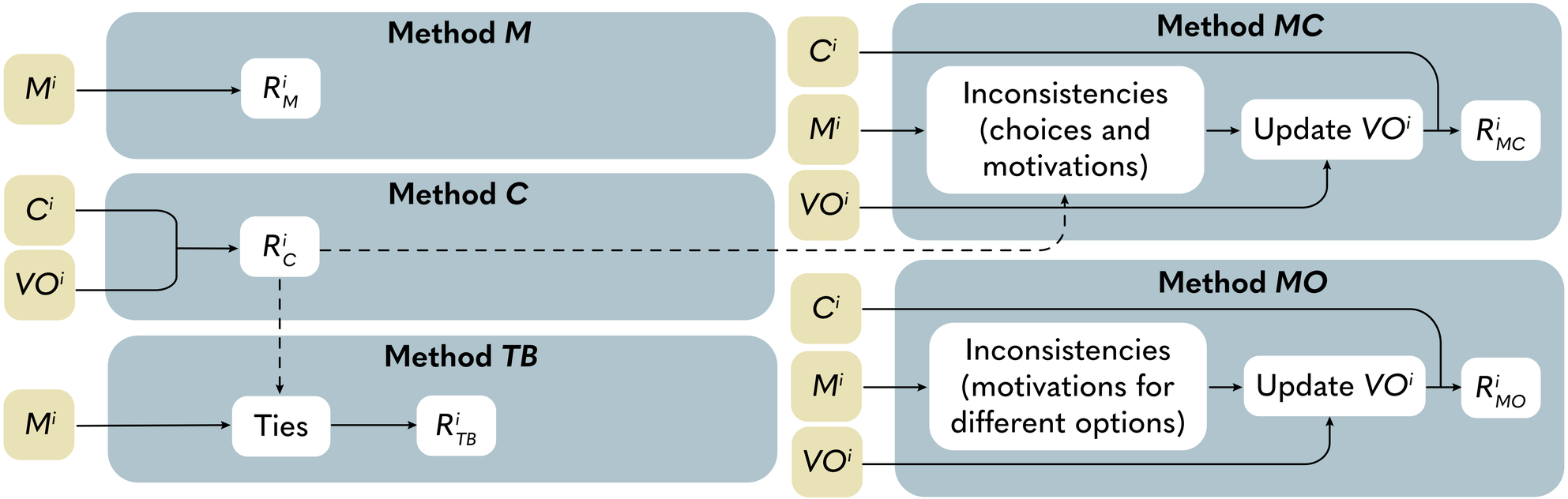
Value Preferences Estimation



Value Preferences Conflicts

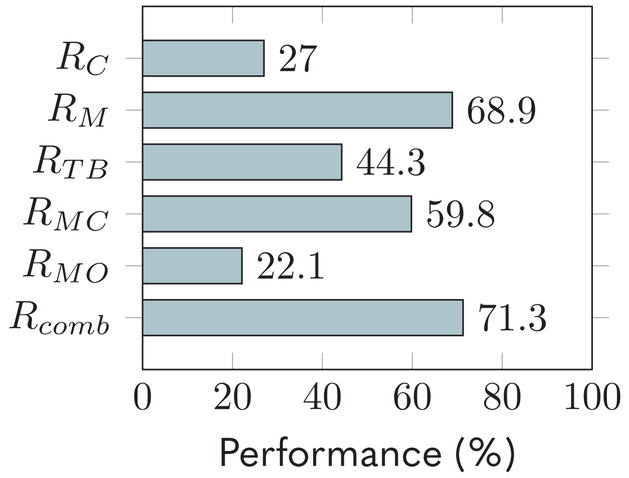


Value Preferences Estimation Methods

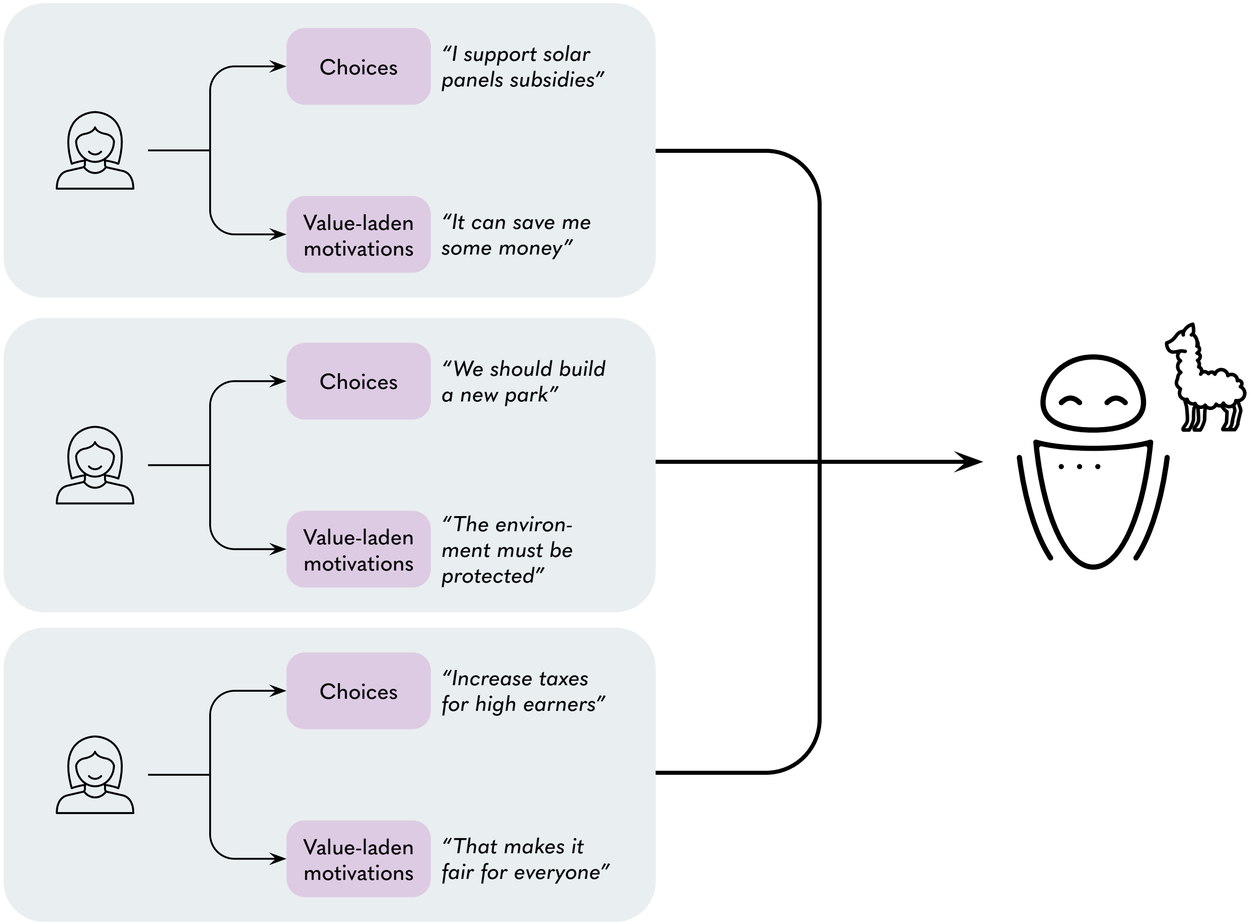


Results

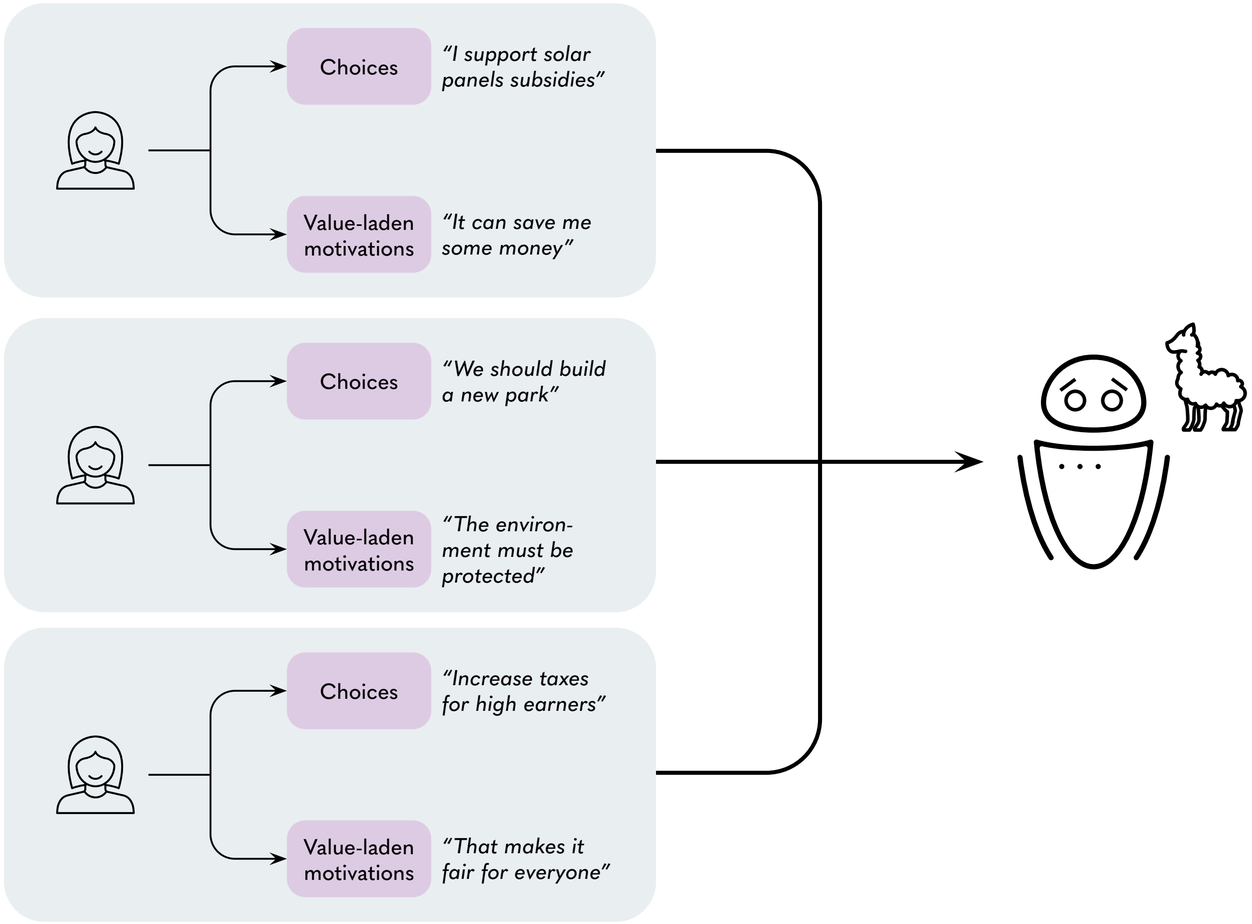
- We apply our methods to a **survey on green energy transition**.
- We ask **human evaluators** to estimate value preferences profiles based on the same survey data.
- Executing a **combination of the methods** leads to the best performance.



Value Prediction via NLP

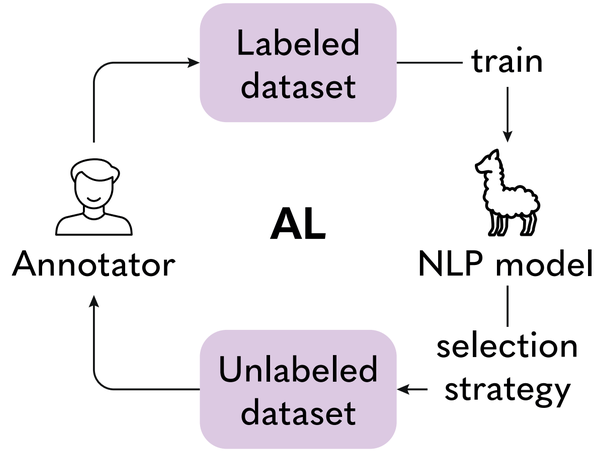


Value Prediction via NLP

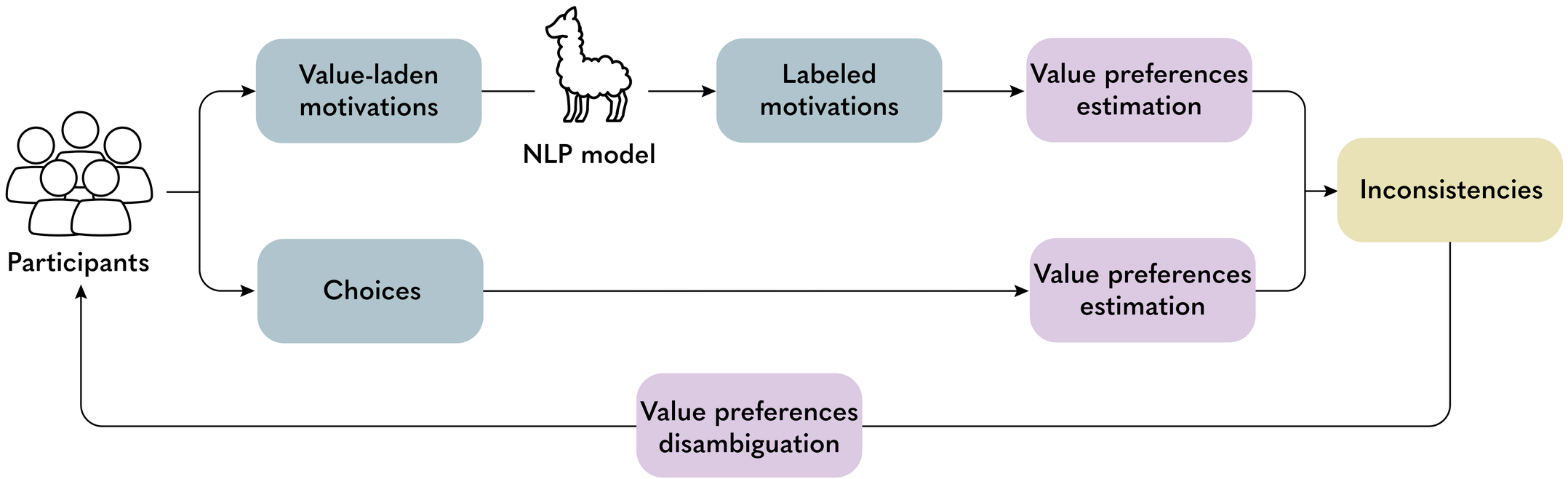


Active Learning

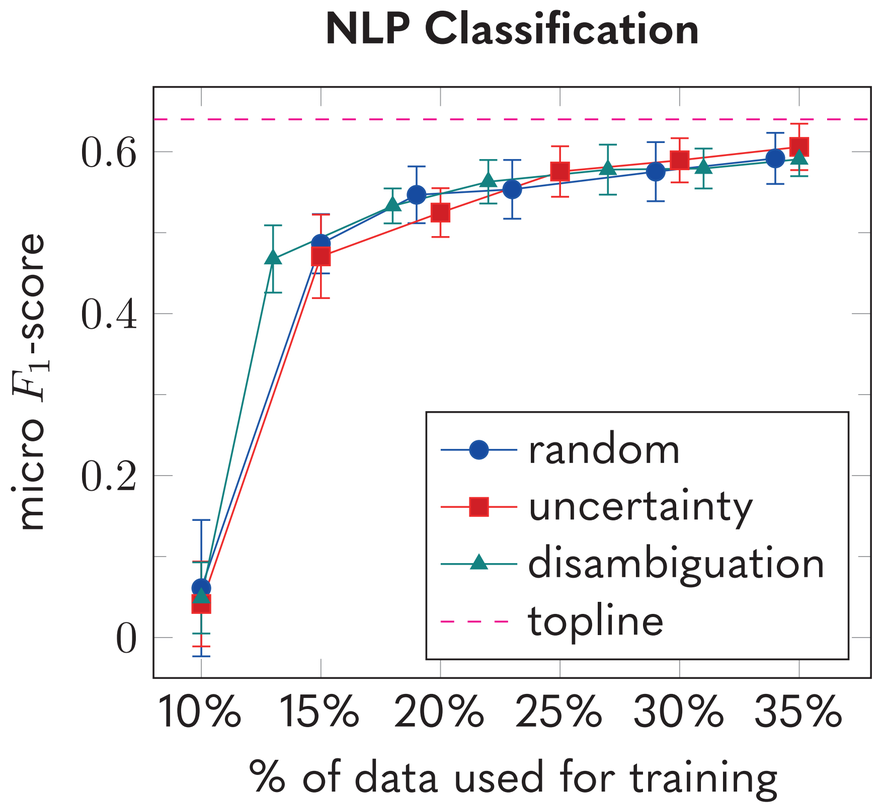
- Strategy to decide **which data points to annotate first**.
- Typically informed by the **NLP model performance**.
- We propose a strategy that selects the most informative data point **based on the downstream value estimation task**.

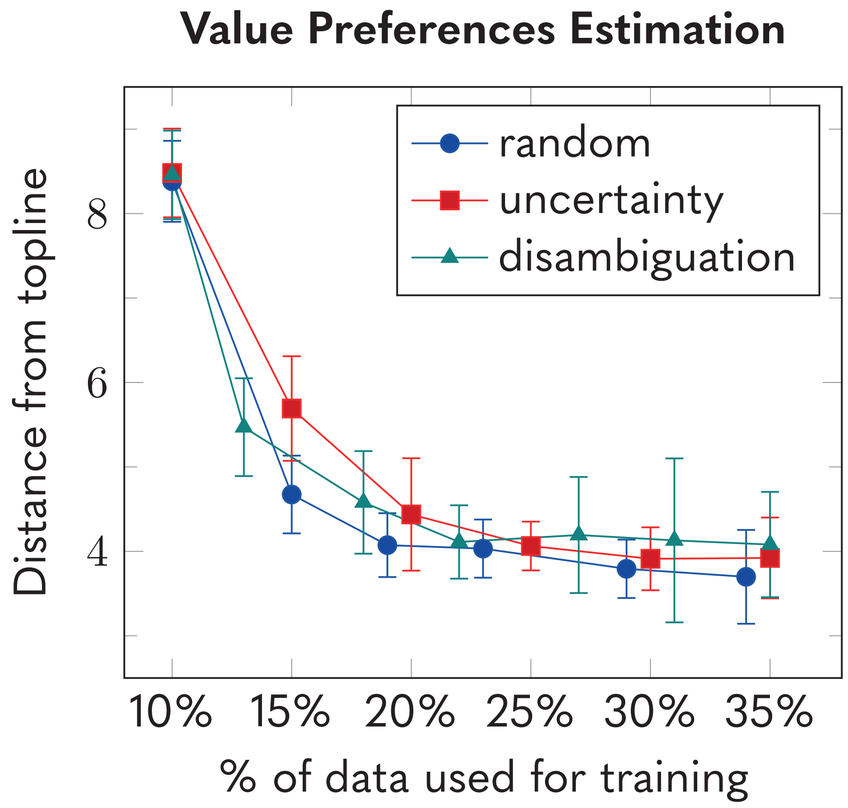


Value Preferences Disambiguation



Results


NLP Classification
micro F_1-score
0.6
0.4
0.2
0
10%
15%
20%
25%
30%
35%
% of data used for training
random
uncertainty
disambiguation
topline


Value Preferences Estimation
Distance from topline
8
6
4
10%
15%
20%
25%
30%
35%
% of data used for training
random
uncertainty
disambiguation

Takeaways

- We proposed methods for **estimating** and **disambiguating** value preferences of citizens in a participatory system.

- We focused on cases where we observe **value conflicts** between citizens' choices and motivations.

- Value preferences estimation worked, disambiguation didn't.

Thank you!

Link to the paper!

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