# Predicting automated negotiation duration at the edge of the network

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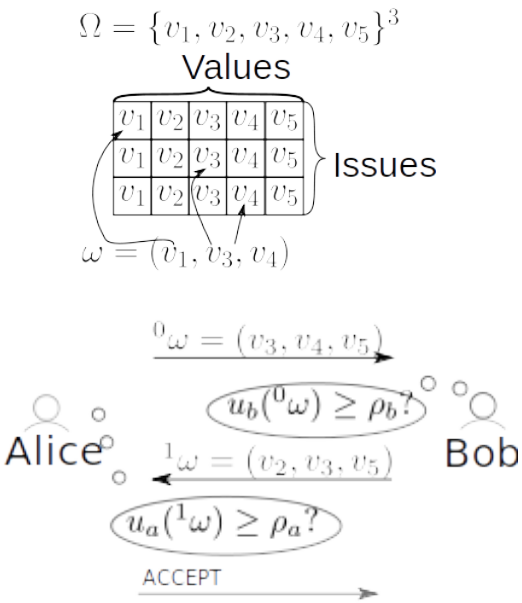
## Objectives

- Develop a novel method for predicting the duration of automated negotiation
- Develop agents that can express constraints to shorten the negotiation
- Develop agents that can reason about constraints while also maximising their utility without increasing the length of the negotiation

## Technical Challenges

- Low computation recourse enough to be used at the edge of the network
- Efficiently reach consensus while exposing as little private information as possible

## Approaches



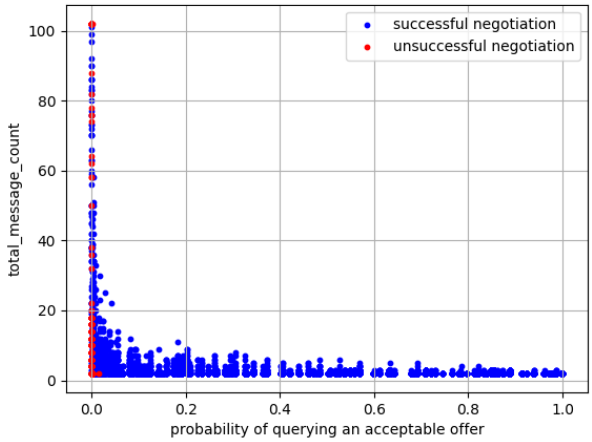

- Simulate negotiations, as shown above, measuring the number of messages exchanged to measure the impact of our

## Military & Coalition Relevance

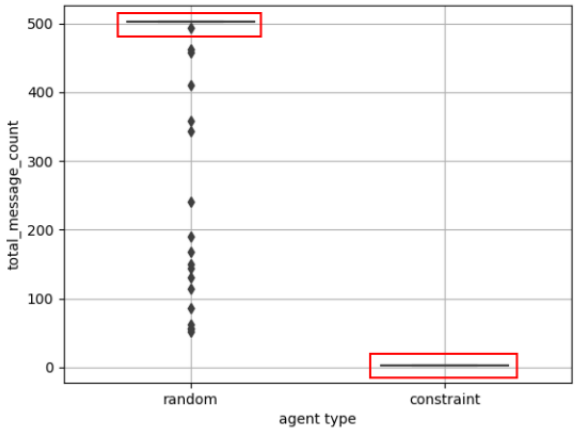
- Resource and work distribution among autonomous agents in coalitional environments
- Power distribution in electrical networks

## Results

- First plot bellow shows a very clear correlation between the number of messages exchanged and our proposed difficulty measure




- The second plot shows constraints help terminate impossible negotiations much faster. Note that the negotiation can terminate early if agents are unable to find acceptable offers




## Summary & Future Work

- Aim to provide measure to predict length of an automated negotiation
- Use constraints to shorten automated negotiations
- Future work: Incorporate reasoning that can handle constraints and also maximise utility without increasing negotiation length