

A heuristic strategy for persuasion dialogues

Josh Murphy, Elizabeth Black, Michael Luck

King's College London

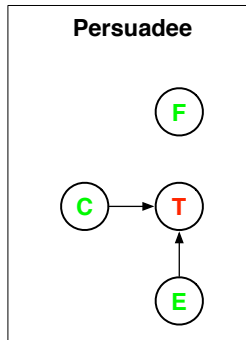
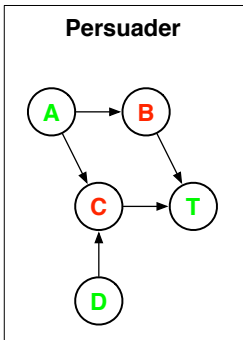
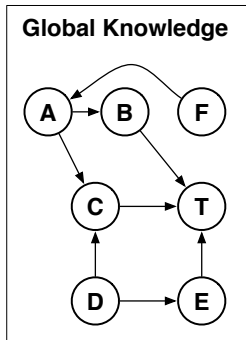
josh.murphy@kcl.ac.uk

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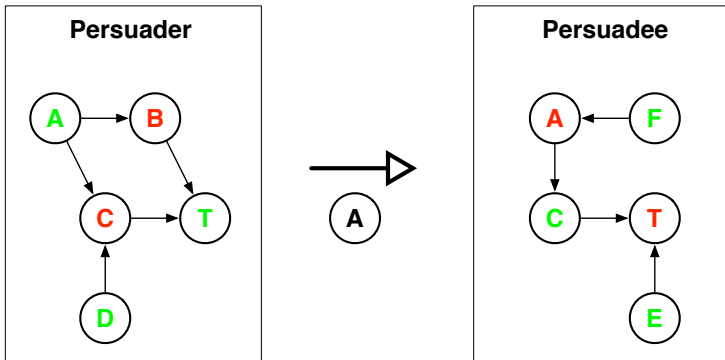
Argument-based persuasion dialogues

- Two-agent, one-way persuasion dialogue
- The persuader wants to get the persuadee to believe a particular topic argument is acceptable.

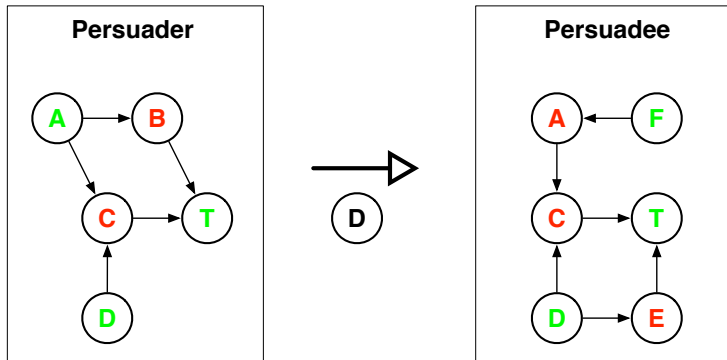
Example dialogue



Example dialogue



Example dialogue



Current methods for computing a dialogue strategy

- AI planning [Black et al., 2014].
- Mixed observability Markov decision problems [Hadoux et al., 2015]
- Minimax algorithm [Rienstra et al., 2013]

However, none of these approaches have been shown to scale to domains with more than 10 arguments.

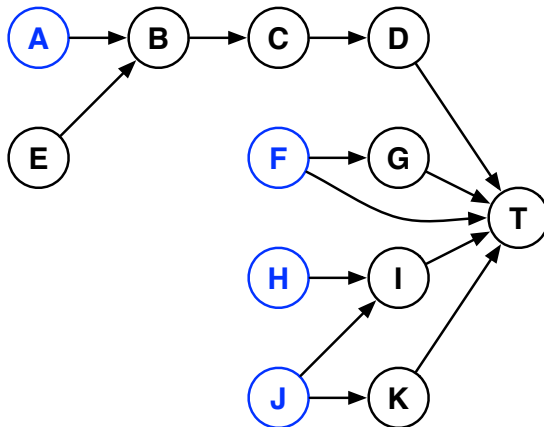
Estimating the influence of arguments

To obtain an accurate estimate of how beneficial asserting an argument will be we want to take into account:

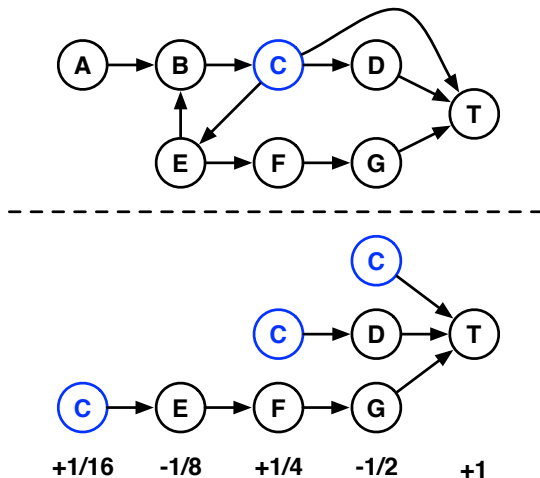
- Does the argument support or defend the topic?
- What is the estimated of influence the argument has over the topic?

Estimating the influence of arguments

- What is the estimated influence an argument has over the topic?



Estimating the influence of arguments



Experimental evaluation

- Evaluation through simulation; Generate thousands of instances of dialogue scenarios.
- Measure if the persuader is successful when using the heuristic strategy, and how long computing the strategy takes.
- Use a random strategy as a lower bound on success.

Results

The heuristic strategy is fast to compute, and efficiently scales to domains with 50 arguments.

Args	10	20	30	40	50
Time	<0.1	0.21	0.37	0.56	0.77

Table: Time to compute heuristic strategy (seconds). *Args* is the number of arguments in the domain.

Results

The heuristic strategy has a high success rate.

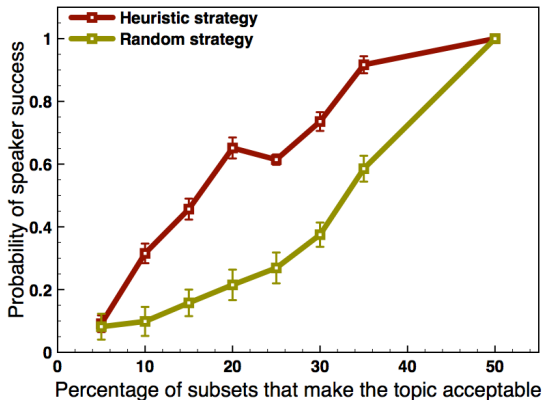


Figure: Percentage success rate of strategies. Error bars indicate standard error.

- Application of the strategy to more complex dialogue scenarios.
 - ▶ Particularly dialogues with more than two participants.

References



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