

MORITA TARVIRDIANS, CATHARINE OERTEL, CATHOLIJN JONKER  
DELFT UNIVERSITY OF TECHNOLOGY

## INTRODUCTION

People make numerous decisions concerning various issues in their daily lives. Some of these decisions hold significant importance, capable of influencing their personal lives and even society. As a result, individuals are required to contemplate and assess diverse facets of the given matter.

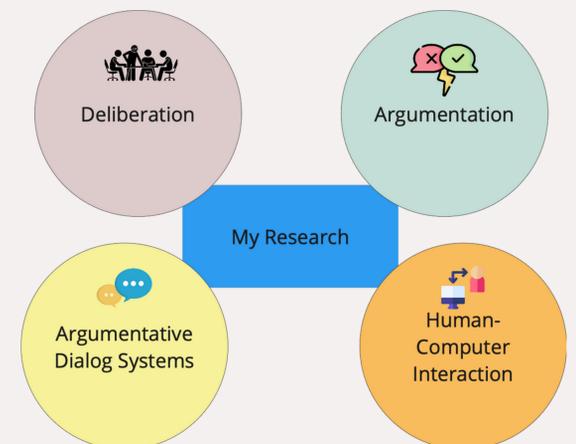
With recent advancements in the field of conversational AI, it holds promise as a tool to assist people in their contemplative processes. However, despite improvements in accuracy and contextual understanding in conversational AI, challenges persist in its ability to understand what drives a human or what is important to a human. To address this issue, it becomes necessary to study human perspectives, the underlying rationale behind their viewpoints, a task that can often prove intricate, even for individuals themselves.

In this ongoing work, our ultimate aim is to develop an algorithm that aids users in their contemplation process. This algorithm will enable users to explore various viewpoints and assess them in depth in relation to their personal circumstances and preferences. This research study represents an important step towards modeling human perspectives in human-agent interactions.

## BACKGROUND

Current literature on deliberation mainly concentrates on public deliberation, involving various individuals or stakeholders, which plays a crucial role in citizen engagement in policy-making and achieving consensus in public discussions. Conversational agents have been employed as moderators or facilitators in these deliberations. While current research predominantly emphasizes group deliberations, there is limited exploration of personalized deliberation, where the primary objective is not consensus but the cultivation of well-informed and well-founded opinions, essential for significant decision-making.

Cooperative argumentative dialogue systems have been developed to engage in personalized deliberative dialogue with users, assisting them in forming opinions by exposing them to diverse viewpoints. Previous works have focused on conversation personalization by modeling user interest and engagement, but they have not provided the user with an opportunity to contemplate different arguments. In our work, our primary aim is to develop an algorithm to assist users in self-reflection while exploring various viewpoints on a given topic. This is critical for developing well-founded opinions rooted in their individual factors.



## OBJECTIVES & METHOD

### Overarching Aim:

To create a personalised deliberation platform that assists users in:

- Exploring diverse perspectives
- Evaluating them in the context of their individual circumstances and interests
- Enabling them to construct well-founded arguments before making a decision

### Objectives:

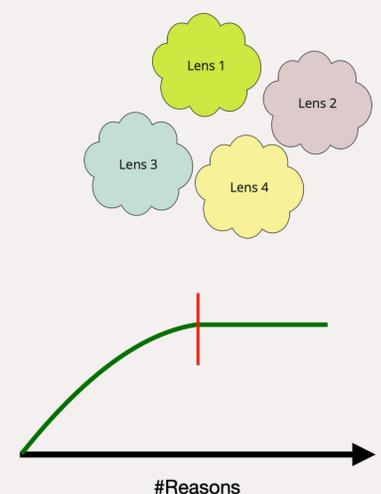
- To develop a methodology to structure various viewpoints
- To develop an algorithm that prompts users to reflect, facilitating a deeper exploration of various perspectives

### Research Question:

Does our developed algorithm outperform the baseline approach in the elicitation of higher-quality reasons?

### Approach:

- Phase 1:
  - Collect viewpoints from experienced people on the topic of "Career Path: Academia vs Industry" through crowdsourcing
  - Develop a methodology to structure these viewpoints based on the lenses (perspectives) provided within them
- Phase 2:
  - Develop an algorithm to prompt users for self-reflection and collect reasons until the reasons start to converge
  - Conduct a user study to evaluate the performance of the developed algorithm in terms of the quality of elicited reasons



## CONTACT

M.Tarvirdians@tudelft.nl  
Delft University of Technology  
Van Mourik Broekmanweg 6, 2628 XE Delft, The Netherlands

## RELATED LITERATURE

1. A. Aicher, N. Rach, W. Minker, and S. Ultes. Opinion building based on the argumentative dialogue system bea. In Increasing Naturalness and Flexibility in Spoken Dialogue Interaction: 10th International Workshop on Spoken Dialogue Systems, pages 307–318. Springer, 2021.
2. A. Aicher, N. Gerstenlauer, W. Minker, and S. Ultes. User interest modelling in argumentative dialogue systems. In Proceedings of the Thirteenth Language Resources and Evaluation Conference, pages 127–136, 2022.
3. S. Chen, D. Khashabi, W. Yin, C. Callison-Burch, and D. Roth. Seeing things from a different angle: Discovering diverse perspectives about claims. arXiv preprint arXiv:1906.03538, 2019.
4. R. Hadfi, J. Haqbeen, S. Sahab, and T. Ito. Argumentative conversational agents for online discussions. Journal of Systems Science and Systems Engineering, 30:450–464, 2021.
5. J. Haqbeen, T. Ito, R. Hadfi, T. Nishida, Z. Sahab, S. Sahab, S. Roghmal, and R. Amiryar. Promoting discussion with ai-based facilitation: Urban dialogue with kabul city. In Proceedings of the 8th ACM Collective Intelligence, ACM Collective Intelligence Conference Series, Boston (Virtual Conference), South Padre Island, TX, USA, volume 18, 2020.
6. H. Kim, H. Kim, K. J. Jo, and J. Kim. Starrythoughts: facilitating diverse opinion exploration on social issues. Proceedings of the ACM on Human-Computer Interaction, 5(CSCWI):1–29, 2021.
7. Kriplean, J. T. Morgan, D. Freelon, A. Borning, and L. Bennett. Considerit: Improving structured public deliberation. In CHI'11 Extended Abstracts on Human Factors in Computing Systems, pages 1831–1836. 2011.