

Understanding mental models through a moderated framework for serious discussion

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Abstract: Mental models are informal representations of how the world works. They influence how we perceive, behave, and decide. Mental models are updated and maintained through direct observation, learning, and experience, and are continuously relied upon to reason, explain, design, communicate, act, predict, and explore. As such, they play a fundamental role across all areas of human agency. Practitioners from fields as diverse as behavioural science, psychology, economics, education and sustainability would therefore gain much insight from tools that enabled them formalise computer simulations from the mental models expressed by a group within a given problem situation.

Our goal is to develop a real-time, moderated steering environment for better understanding and formalising mental models from online discussions. Users are presented with a topic, question, or problem to debate, on which they can express their opinions/thoughts in the form of comments. Users can also respond or expand on other user's opinions and/or initiate a new line of discussion. The discussion chain is then mined in real time, using an ensemble of algorithms (including but not limited to concept mining, topic modelling, and sentiment analysis) to extract opinions, keywords and concepts. This information is transcribed into semi-quantitative simulations using Fuzzy Cognitive Maps, Causal Loop Diagrams, and Networks Diagrams as the discussion evolves (Figure 1). To provide feedback, the system presents users with dynamic visualizations of the collective mental model which they can use as contextual information to refine and update their individual mental models. Feedback can also be introduced by targeted moderator comments to steer or "nudge" the discussion towards a desirable collective mental model, outcome, consensus, or agreement.

This framework could be used in a variety of settings and problem situations where the steering of collective mental models could improve the functioning, resilience and/or sustainability of a given (social, environmental, or technical) system, or used by policy makers or any other organization who would benefit from a more direct, transparent and meaningful engagement of its stakeholders.

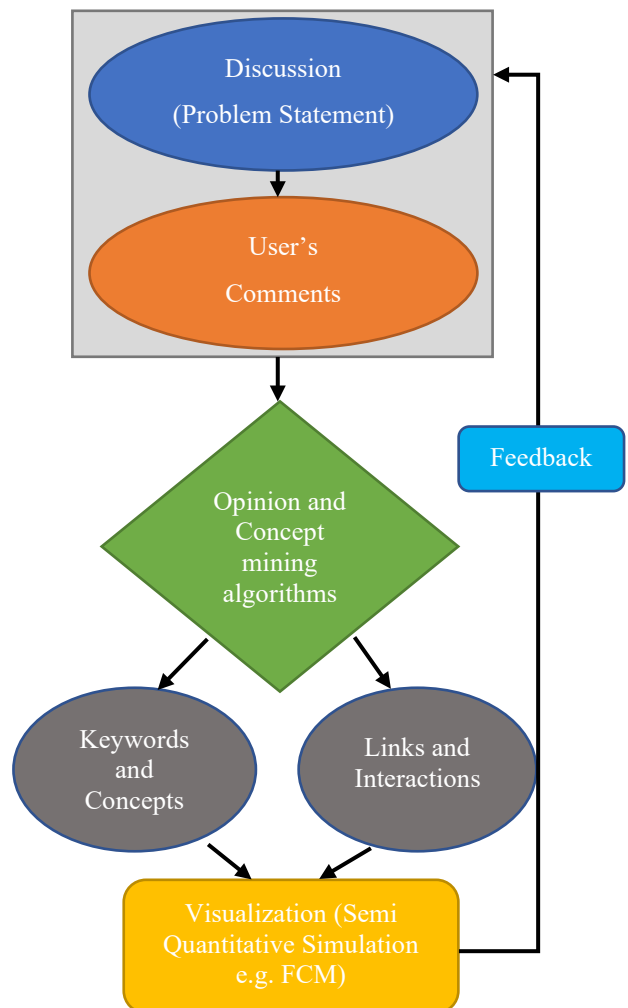


Figure 1. Overview of Framework

Keywords: Real-time steering environment, moderated serious discussions, social feedback