

## Abstract

The purpose of studying dialogue modelling and dialogue management is to provide models allowing us to explore how language, and especially spoken dialogue, is used in different activities. This thesis shows how issues (modelled semantically as questions) in general can be used as a basis for dialogue management.

In an abstract sense, the goal of all practical dialogue is to communicate information which is useful in some activity. This means that conversational goals should describe missing information, and to fulfil a conversational goal, what we need to do is to communicate the missing information. Issues, or questions, are essentially entities specifying certain pieces of as-yet-unavailable information. That is, conversational goals can to a large extent be modelled as questions.

The exploration of issue-based dialogue management in this thesis proceeds both on a theoretical and a practical implementation level. The thesis first explores basic issue-based dialogue management and implement a basic system illustrating the use of issue-based dialogue management. In the following chapters, this simple system is extended to handle grounding issues, addressing unraised issues, and action-oriented and negotiative dialogue. Finally, based on the differences between the successive versions of the theory (and implementation), we provide a characterization of different types of dialogue.

The issue-based approach to dialogue management turns out to be very useful for formulating general and theoretically motivated accounts of important aspects of dialogue, such as inquiry-oriented dialogue interactions, dealing with multiple simultaneous tasks, sharing information between tasks, grounding, interactive communication management, question accommodation, simple belief revision, action-oriented dialogue, and simple negotiative dialogue. The model is can be implemented rather straightforwardly using the TRINDIKIT, which has proven to be a very useful tool for exploring the issue-based approach.

KEY WORDS: dialogue management, dialogue modelling, dialogue systems, questions under discussion, grounding, accommodation, negotiative dialogue

The thesis is written in English.

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