

Semantic Information Processing for Multi-party Interaction

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Abstract. We present ongoing research efforts using semantic representations and processing, combined with machine learning approaches to structure, understand, summarize etc. the multimodal information available from multi-party meeting recordings.

In the AMI and AMIDA projects¹, we are working with our partners on numerous aspects of analysing, structuring and understanding multimodal recordings of multi-party meetings. We are working on applications based on this understanding that allow browsing of meetings as well as supporting tools that can be used during meetings. The AMI and AMIDA corpora of well over 100 hours of meetings are freely available for research purposes.

Semantic Analysis: The main application of semantic analysis is through NLU components that work on the ASR output with semantic parsers. The target semantics are encoded in domain specific ontologies, used to represent the content of the discussion. Other semantic frameworks represent various aspects of the discourse, e.g., dialogue and negotiation acts. These are typically analysed by machine learning systems.

Semantic Processing: An important aspect of analysing the (meeting) documents are various levels of segmentation. On the highest level, these are topic segments that typically last several minutes. On the lowest level, these are dialogue acts that loosely correspond to utterances or sentences. The task of semantic processing is twofold: first, the underlying structure, e.g., statements and responses must be determined; second, a discourse model with inferences over these structures is used to determine the current state of the discussion and thus the final results of a meeting. As an example, we present a complete system that understands and summarizes the decisions made during a meeting.

Semantics-based Presentations: Based on the results of semantic processing, we can generate various summaries of meetings. As examples, we present short abstracts generated using NLG techniques as well as longer storyboards that combine extractive summarization technology with semantic discourse understanding. The latter can be presented as meeting browsers, allowing direct access to the entire meeting recording.

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