

Industrial Engineering and Computer Sciences Division (G2I)

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INTERACTIONS**

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January 2007

RESEARCH REPORT

2007-400-004



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Analysing Face to Face Computer-mediated Interactions

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Abstract. Detailed analysis of face to face computer mediated interactions implies a study of a corpus composed of the interaction traces produced by the collaborative tool and video and audio recordings. Because of their separate nature, it is frequently difficult to perform this joint analysis. In order to facilitate such analyses we propose a model for describing corpora composed of sources from different media; we also describe how certain types of analyses can be modelled and reified for future use. We show how a tool based on these models facilitates a number of analysis methodologies by simplifying situations where entities are multiple: several researchers (inter-coder reliability), several sources for the corpus (multi-modal interactions) or several analyses (for re-use of prior analyses or for the confrontation and comparison of two different analyses. We believe that capitalizing on previous analyses and affording parallel analysis of video and computer-mediated traces will open new avenues for researchers and teachers.

Introduction

We are interested in analysing face to face situations where students are learning with the aid of computer-based collaboration and communication tools. Detailed analysis of such interactions implies a study of a corpus composed of the interaction traces produced by the collaborative tools and video and audio recordings. Because of their separate nature, it is frequently difficult to perform this joint analysis. Furthermore, different analyses of the same corpus might frequently be enhanced by cross-comparison - a task that is very difficult when researchers are not able to work in close collaboration. Given the inherent cost of setting up a study, it would be good to be able to reify an analysis, allowing subsequent research on the same corpus while taking prior analyses into consideration.

Aims

In order to facilitate the task of the researcher, our goal is to design a tool which solves these problems (or at least diminishes their technological origins). Such a tool must enable parallel analysis of a multi-modal corpus (composed of different sources such as videos, transcriptions, interviews and computer-mediated interaction traces), grouping together when necessary corpora of similar nature (e.g. the 10 corpora of a 10 dyad study) in order to perform statistical analysis or to obtain a wider picture of the situation. In addition, our tool mutualizes work by different researchers, that cross-comparison of different analyses and validation of identical analyses may easily be performed.

This tool is being designed as a component of the LEAD project and will start seeing use during the project's second year. We hope that the tool will help the various members of LEAD mutualize their findings and analyses. Reciprocally, the project will provide valuable feedback to insure both that the functionalities are those required by researchers and that the models that have been developed are appropriate.

Design and Findings

The key to enabling reification of analyses is to separate the different entities. An analysis then becomes the association of a corpus, an analysis methodology and the researcher who applies it to the corpus. We describe models both for representing corpora and analysis methodologies, using transformation of documents of the primary corpus to obtain new documents and the creation of links between concepts and parts of the corpus to describe an analysis. This simplifies situations where entities are multiple: several researchers (inter-coder reliability), several sources for the corpus (multi-modal interactions) or several analyses (for re-use of prior analyses or for the confrontation and comparison of two different analyses).

We approach the parallel analysis problem through the concept of a generic navigational tool, which combines analysing, browsing and "replaying" the corpus. Any sequence of temporal events can be controlled and viewed with our "everyday" notion of a video player. We then extend this notion to interaction traces and synchronise our various sources temporally. Replaying these sources in parallel provides the context the researcher needs to understand these complex multi-modal interactions. Thus, the navigational tool enables the researcher to establish links between the corpus and the chosen analysis methodology.

The main originality of this method is an operational descriptive model for analysis methodologies. We show how we apply such a model to describe the RAINBOW methodology (Baker et al., 2002): The model defines a list of categories; the act of coding consists of creating a link between a category and a certain zone of the corpus (Corbel, Girardot & Lund, 2006). We also explore the case of analysing "re-formulation", by looking at how concepts appear in different forms in different media, such as dialogue, computer-based chat and a co-constructed text.

Conclusion

It is often the case that analyses of human interactive activity are lost once an article is written about the results obtained. Although it is clear that corpora are gathered in order to answer a particular research question, it is still interesting to capitalise upon analyses that have already been carried out. The situation is not so different in the case where any of the three entities (researcher, analysis methodology, corpus) we have presented are multiple - again we see the necessity of simplifying the task of the researcher so that complex analysis methodologies are not disregarded due to their prohibitive cost (whether it be cognitive, economical or time-related). We believe that capitalizing on previous analyses and affording parallel analysis of video and computer-mediated traces will open new avenues for researchers and teachers alike.

References

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