CSCL 2003 INTERACTIVE EVENT PROPOSAL

Participatory Analysis of Synchronous Collaborative Problem Solving using the OCAF methodology and tools

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Abstract

This interactive event aims at introducing the participants in analysis of collaborative problem-solving activities, in which they are going to be first involved themselves, using the OCAF (Object-oriented collaboration analysis framework) methodology and Collaboration analysis tools.

Overview

This interactive event is planned to take place in a computer laboratory. It evolves in three phases: During the first stage, the participants are requested to form small groups of two to three partners and use real-time distance collaboration tools in order to solve a given problem. The location of the group members will be such within the lab that they can interact exclusively through the provided tools, thus simulating distance problem-solving conditions. Subsequently, in phase two, analysis of extracts of participants' activity using the supplied logged events analysis tools will be performed. These tools permit playback of the problem solving activity and are based on the OCAF annotation scheme. Through this scheme the exchanged text messages and the actions in the shared activity board during the first phase can be annotated and an abstract view of the collaboration and roles of the participants can be defined. In phase three, the produced views are discussed and compared in an open session. The subjective nature of analysis is expected to emerge during the process, since the same activity is going to be analysed by more than one participant, and the results will be compared in phase three of the event. During the discussion issues related to the analysis points of view, i.e. analysis oriented to the quality of problem solving, in combination to collaboration modes adopted by participants, to exploitation of analysis tools by researchers, and teachers, to the generality of the approach, to usability of the tools etc. are expected to be covered.
The target number of participants in this event is 10 to 20, subject to availability of adequate number of interconnected workstations by the hosting lab. The duration of the activity is two hours. Handouts and instructions will be provided by the organisers. Two to three facilitators and support personnel will back the event.

The proposed timetable of the interactive event is as follows:
0.00 – 0.05 Start - welcome
0.05- 0.30 Introduction to the OCAF methodology and tools
0.30-1.00 Hands-on collaborative problem solving activity using *ModellingSpace*
1.00-1.45 Analysis of logfiles of activity by participants, using the *COLAT tools*
1.45- 2.00 Open discussion on findings and conclusions

Background of the activity

The Collaboration Analysis Tools

The *Collaboration Analysis Toolkit (ColAT)* is a software environment that is going to be used for off-line analysis and processing of the generated field data, collected during phase one of the event. While the emphasis and the prime objective of this environment is in supporting analysis of data of collaborative problem solving activities, there is no inherent limitation to the use of ColAT for other types of educational activities and more general ethnographic studies. The proposed methodology allows both analysis of the quality of collaboration and quality of problem solving

Screen capturing facilities, available with modern display devices, is going to be used to generate stream of information relating to the activity at the workstation display, which can be mixed to other sources of video and other media, overcoming the problem of monitoring at the single group in the context of a large context, like the interactive event proposed here. This stream of events is the main source of data.

From these field data, the higher-level interpretative entries and annotations can be created using the tool. The ColAT editor, is the component of the environment through which this operation is effected. In this context event of *task level* can be generated out of a number of logged activity events. In this task level the Object-Oriented Collaboration Analysis Framework (OCAF), see Avouris et al. 2002 and 2003a, is going to be used. This framework is particularly suitable for analysis of collaborative learning activities, which involve interleaving of actions and dialogue. OCAF puts emphasis on the objects of the jointly developed solution. Every object is assigned its own history of events (actions and messages) related to its existence. The history of each one of these objects is a sequence of events that refer to an actor and an action that may be categorised according to the following functional types:

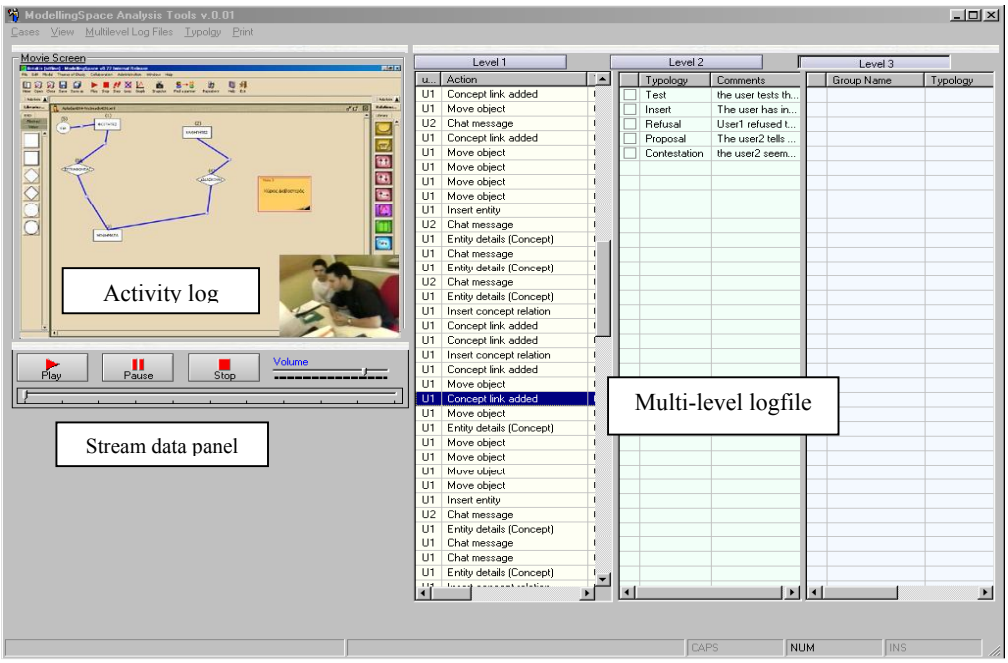
- I = Insertion of the item in the shared space
- P= Proposal of an item or proposal of a state of an item
- C= Contestation of a proposal
- R= Rejection / refutation of a proposal
- X= Acknowledgement/ acceptance of a proposal
- T= Test/Verify using tools or other means of an object or a construct (model)

As an example of an OCAF event, the introduction of a new relation in the model, is indicated as *Relation (T)= I_{U1}*, i.e. User 1 inserted the Relation (T) in the shared space.

The Real-time Collaboration Environment ModellingSpace

The first phase of the experiment involves use of the real-time collaboration environment ModellingSpace (Dimitracopoulou et al. 2003, Avouris et al. 2003b), supporting multiple reasoning modes -quantitative, semiquantitative, qualitative, and multiple entity types. ModellingSpace is an open learning environment that supports real-time and asynchronous collaboration of small groups of students engaged in problem solving. This environment has been designed and built, based on experience with existing previous tools, like *ModelsCreator 2.0* (Komis et al. 2002), which have been used in the past for teaching multi-disciplinary science subjects in various educational settings, see Komis et al. (2002), Fidas et al. (2002). Tools have been developed and integrated in the new ModellingSpace environment, related to analysis of collaboration and problem solving, like the COLAT tools, used in the frame of the proposed activity. The ModellingSpace (MS) software is a client-server distributed application, which comprises a suite of interconnected tools to support collaborative modelling activities. MS includes tools that permit building and editing of primitive

entities, building and exploring models that are made of primitive entities, synchronous and asynchronous interaction of students, collocated or at a distance who collaborate in building models and tools that support analysis of modelling activities.



Overview of the Collaboration Analysis Toolkit (ColAT) environment

Target Participants

The target group of participants to this event are CSCL researchers and educators who are interested in obtaining hands-on experience with real time collaborative modelling and problem-solving tools and in gaining an insight in participatory collaboration analysis methods and tools.

Supportive documentation

1. Avouris, N.M., Dimitracopoulou A., Komis, V., Fidas C., (2002), OCAF: An object-oriented model of analysis of collaborative problem solving, G. Stahl (ed), Proceedings CSCL 2002, pp.92-101, Colorado, January 2002, Erlbaum Assoc. Hillsdale, NJ, 2002
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5. Dimitracopoulou A., Komis V., Design Principles for an Open and Wide MODELLINGSPACE for Learning, Modelling & Collaboration in Sciences and Mathematics, ModellingSpace Workshop, CBLIS 2003, Nicosia 2003.
6. Komis V., Avouris N., Fidas C., (2002), Computer-supported collaborative concept mapping: Study of synchronous peer interaction, Education and Information Technologies vol.7, 2, pp.169-188.
7. Fidas C., Komis V., Avouris N.M., Dimitracopoulou A., (2002a), Collaborative Problem solving using an Open Modelling Environment, Proc. CSCL 2002, pp. 654-656, Erlbaum Assoc, Hillsdale NJ, 2002.