

Human Aspects of Model Merging

[Position Paper]

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ABSTRACT

In recent years, research on model merging has often focused on algorithmic problems. Although a lot of tasks may be done automatically by a tool, there still exist situations when users want to or sometimes have to intervene. Thus, it is also crucial to provide well-designed user interfaces that allow users to adapt or modify results of an automatic process. However, users often do not want to change their habits or even adopt strategies from similar processes which rises a simple question: Can we gain new insights for the design of interactive merging tools when we observe people merging models manually?

Keywords

model merging, UML, user-centered, tool design

1. INTRODUCTION

So far, research on model merging has often concentrated on algorithmic problems and mostly automatic solutions to them. However, there are various situations when algorithmic solutions might not be sufficient and software engineers have to compare and merge different models manually or at least make important decisions. Especially semantic conflicts that occur during a model merging process cannot always be resolved without human interaction because an automatic method may simply provide inadequate or even worse invalid results.

Although there exist tools that provide support for interactive graph or model comparison (e.g. [1] or [3]), to the best of our knowledge, none of them has been developed in a user-centered approach, i.e., actually involving users' into the design process, and further, deriving an intuitive user interface from their work habits and strategies. However, this is an important criterion when developing tools, i.e., especially when developing interactive software, it is crucial to support the users' work habits and to design user interfaces as intuitive and well-suited as possible.

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2. MANUAL MODEL MERGING

In order to address at least some of the issues described above, we recently conducted a study where we investigated how humans merge UML models without any software support [2]. In particular, we observed people's activities when manually comparing and merging printed UML class diagrams. As tools we only provided a set of pens and a blank sheet of paper. In order to analyze the collected data systematically, we used the Grounded Theory methodology of Strauss and Corbin [4] and gained a qualitative theory of human model merging activities—basically an abstract description of the participants' behavior as well as strategies they developed during the complete merging process. These results are supposed to give advice on how to create intuitive user interfaces for model merging tools. As a first step we derived a set of guidelines for tool design.

3. OPEN QUESTIONS

However, there are still open questions that go beyond guidelines for tool design. For instance, it could be interesting to compare human strategies for model merging with algorithmic solutions. This may help to develop more intuitive representations of the data achieved by comparison algorithms. Furthermore, gained insights can be used to make comparison algorithms better fit the users' work habits.

A parallel working group may discuss how to enhance current solutions for interactive model comparison and merging and how to better involve future users into that process.

4. REFERENCES

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