SAP Research Dresden

SAP Research (www.sap.com/research) is the global research and innovation unit of SAP, with a network of 20 research locations worldwide and a team of more than 400 excellent scientists. One of the largest teams within SAP research is the SAP Research Dresden group which contributes significantly to three SAP Research topics: mobile computing, business intelligence, and software engineering.

Join our Team

A team of researchers from the University of Münster and SAP Research is looking for students who are eager to work in the research field of real-time collaboration. Prominent real-time collaboration tools such as Google Docs or EtherPad allow multiple users to edit the very same document simultaneously. Currently, there are numerous open research questions where talented students could engage and work with cutting-edge collaboration technology (see research topics section). Interested students can apply for a 3-6 months internship and/or thesis project.

Benefits for Students

- In-depth understanding of the latest real-time collaboration technology
- Opportunities to co-author academic papers and/or patents
- A demanding and rewarding working atmosphere and company culture
- An remuneration of 800€ a month to cover living expenses
Application Process

1. Get in touch with Dr. Tim A. Majchrzak¹ and decide whether you would like to do an internship or write your thesis. If you are interested in writing your thesis, have a look at the current research topics 1-3.

2. Apply for a position by turning in the following application documents: (1) cover letter, (2) resume, (3) transcript of records. You may also add optional documents like employee certificates, recommendation letters, etc.

3. Within at most a few weeks, Dr. Tim Majchrzak will inform you about the status of your application.

Research Topic #1 – Development of a Workspace Awareness Library for Web Applications

Figure 1: Examples of awareness widgets

Real-time collaboration apps such as Google Docs allow multiple participants to work together simultaneously. In order to coordinate the work of all users, workspace awareness widgets such as participant lists, telepointers or radar views are indispensable since they answer questions like who is in the workspace, what are the other participants doing, where are they working. In this work, the existing workspace awareness library described in [1] should be enhanced with awareness widgets such as telepointers, radar views, etc. All widgets should be implemented as encapsulated components to eventually allow for reuse in arbitrary standards-based web applications.


Research Topic #2 – Optimizing the Transformation of Single-User Web Applications to Multi-User Web Applications

Developing real-time web-applications such as Google Docs is a demanding task and therefore, we devised an approach [2] to convert existing single-user web apps into multi-user web apps allowing for shared editing. In [2], we described the conversion of two single-user editors (SVG-edit, CKEditor) and also discussed the limitations of this approach. In this work, other existing single-user apps should be converted (e.g. www.circuitlab.com). In particular, web-based charting tools (UML, BPMN or Mind Map tools) are of interest. Furthermore, in [2] we noted that

¹ http://www.wi.uni-muenster.de/pi/personal/majchrzak.php
the number of document manipulations can reach up to 100 document changes a second which is critical regarding the system performance. Therefore, optimization options should be evaluated (e.g. an operation composer) and eventually implemented.


Research Topic #3 – Development of a Framework for Collaborative Graphical Editors

A variety of graphical editors (e.g. UML diagrams, mind maps or petri nets) is realized using two major graphical elements: (1) nodes and (2) connectors. For example, UML class diagrams consist of nodes representing classes, interfaces, etc., and connections representing aggregations, generalizations, etc. In this work, a framework should be devised simplifying the task of developing collaborative, graphical editors that adopt the well-known UI metaphor of nodes and edges. The framework should support the development of standards-based web editors and thus embrace existing W3C standards like HTML, SVG, etc. Moreover, the framework should also be validated implementing numerous graphical editors.