

The Reflective Programmer

Background

Our research efforts are the result of continuous reflection on our programming practices. Developing software is often complicated by a lack of appropriate abstractions or insufficient tool support for grasping the relevant details of large software systems. We approach these and related issues by advancing programming tools, devising new modularity abstractions, and providing run-time support. Consequently, our goal is to improve the comprehension and design of complex software systems.

Description

In the context of a master's project you will design and implement a solution addressing a topic closely related to our research. For example:

- How much effort would it be to integrate support for real-time collaboration into a project management tool or your favorite software development environment? Can we reduce the overhead of developing collaborative software in general?
- How would you integrate functionality of social networks such as Facebook or Twitter into your favorite online Email-client? Can we improve the experience of developing and extending existing web applications?
- When we want to enhance a program, what makes the comprehension of source code difficult? Which kinds of supplementary views can we provide to support the comprehension of object collaboration and to support understanding abstract principles by concrete examples?
- How can we improve debugging, especially the localization of faults, isolation of corrupted state, and understanding of malicious behavior? Can we analyze test case behavior to realize new approaches with a high degree of automation and scalable performance?
- Are there better ways to express software elements' behavior and interactions in source code? How can such novel programming language mechanisms be implemented efficiently?

These questions are examples that highlight possible research directions for your master's project. If you are interested in any of the above or related issues, feel free to stop by and talk to us.

References

- <http://www.hpi.uni-potsdam.de/hirschfeld/>
- <http://www.hpi.uni-potsdam.de/hirschfeld/publications/index.html>

Contact

Software Architecture Group

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