

Software Engineering Seminar

Human Studies in Debugging

Description

With more and more elaborate debugging techniques getting developed by researchers, one can pose the question whether these techniques are (or could be) actually successfully used by *human developers*. Many researchers often only evaluate their techniques empirically without actually doing any *user studies* (since this is expensive), so answering this question is usually non-trivial. Moreover, the whole human debugging process is very complex and is not even very well researched. For example, Böhme et al. [1] try to solve some of the existing issues.

The student should search for and examine human studies related to the debugging process, analyze and evaluate the employed techniques and discuss potential issues.

References

- [1] Marcel Böhme, Ezekiel O. Soremekun, Sudipta Chattopadhyay, Emamurho Ugherughe, and Andreas Zeller. Where is the bug and how is it fixed? an experiment with practitioners. In *Proceedings of the 2017 11th Joint Meeting on Foundations of Software Engineering, ESEC/FSE 2017, Paderborn, Germany, September 4-8, 2017*, pages 117–128, 2017.
- [2] Amy Ko, Thomas LaToza, and Margaret Burnett. A practical guide to controlled experiments of software engineering tools with human participants. *Empirical Software Engineering*, 20, 02 2013.
- [3] Pavneet Singh Kochhar, Xin Xia, David Lo, and Shanping Li. Practitioners' expectations on automated fault localization. In *Proceedings of the 25th International Symposium on Software Testing and Analysis - ISSTA 2016*, Proceedings of the 25th International Symposium on Software Testing and Analysis, pages 165–176, New York, NY, USA. ACM Press.
- [4] Chris Parnin and Alessandro Orso. Are automated debugging techniques actually helping programmers? In *Proceedings of the 2011 International Symposium on Software Testing and Analysis - ISSTA '11*, Proceedings of the 2011 International Symposium on Software Testing and Analysis, pages 199–209. ACM Press.
- [5] D. I. K. Sjoeberg, J. E. Hannay, O. Hansen, V. B. Kampenes, A. Karahasanovic, N. . Liborg, and A. C. Rekdal. A survey of controlled experiments in software engineering. *IEEE Transactions on Software Engineering*, 31(9):733–753, 2005.
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