Software Engineering Seminar

Contextual Fault Localization with Bug Signatures

Description

Automated Fault Localization usually results in a ranking list of program elements (e.g., statements or methods) that are likely to be faulty. Developers are expected to *iteratively* examine each ranked element until they find the actual fault. A main problem with this procedure is that the ranked elements are given to the developer *without any context*. It is not necessarily clear what program elements preceded or succeeded the examined ranked element or in what state the program had been in when the fault occurred. To alleviate this problem, among others, the use of so-called *bug signatures* has been proposed. Bug signatures are intended to not only provide the supposedly buggy element, but also a trace of program elements that led to the fault.

The student is to examine and to discuss the current state of the art regarding contextual fault localization techniques with the main focus on techniques using bug signatures.

References

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[3] David Lo, Hong Cheng, and Xiaoyin Wang. Bug signature minimization and fusion. In *HASE*, pages 340–347. IEEE Computer Society, 2011.

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Contacts

Simon Heiden (`heiden@informatik.hu-berlin.de`)
Software Engineering Group
Institut für Informatik
Humboldt-Universität zu Berlin