Software Engineering Seminar (SoSe 2016)

Spectrum Based Fault Localization

– Multric –

Description

Simply recognizing a bug does not suffice. Generally, the developer wants to know, where exactly the bug is located in the software system under consideration. One technique for fault localization which has raised interest in the recent past is *spectrum based fault localization (SBFL)*. In SBFL, program elements (e.g. lines, methods, files, ...) are ranked based on the likeliness of a bug being located in said program elements. The requirement for SBFL is an existing test suite, since the SBFL ranking is computed based on the coverage of program elements by the execution of test cases. Various formulae exist to compute the ranking scores, as well as techniques to combine various SBFL techniques.

The goal of this topic is to examine the tool Multric which combines *multiple SBFL techniques* in order to improve the generated rankings. Additionally, the approach is able to learn, i.e. train, from pairs of buggy and corrected code.

References

[1] Jifeng Xuan and Martin Monperrus. Learning to Combine Multiple Ranking Metrics for Fault Localization. *2014 IEEE International Conference on Software Maintenance and Evolution*, pages 191–200, 2014.

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