

Software Engineering Seminar (SoSe 2016)

Automated Repair with Search-Based Software Engineering

– RSREPAIR –

Description

Automated program repair is able to simplify the work of a software developer by a large amount. Current approaches are admittedly far from being sophisticated, though. A comparably large branch of approaches uses genetic algorithms to generate viable bug fixes/patches for previously located errors in a software project. The general idea is to mutate the buggy program in a way that solves the problem – generally a failing test case.

The aim of this topic is to examine the tool RSREPAIR which criticizes tools like GENPROG and PAR for utilizing evolutionary algorithms, when it may be the case that the use of these algorithms is, in fact, detrimental to the effectiveness and the efficiency of repair techniques. Instead of genetic algorithms, RSREPAIR uses a random search algorithm.

References

- [1] Yuhua Qi, Xiaoguang Mao, Yan Lei, Ziyang Dai, and Chengsong Wang. The strength of random search on automated program repair. *Proceedings of the 36th International Conference on Software Engineering - ICSE 2014*, pages 254–265, 2014.

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