Semantics based Automated Program Repair

Description

Automated program repair is a relatively new research field that is currently explored by many research groups using different strategies. One very interesting and promising method uses semantic information to repair a fault, i.e. it analyzes the behavior of the given program. The methodology behind this repair approach is that a repair candidate (a patch) is synthesized by using semantic information that is provided by, for example, symbolic execution and constraint solving. A state-of-the-art semantics based repair tool is Angelix [1] which is the successor of SemFix [2]. A main goal of Angelix is to scale to larger, real-world programs to be able to compete with other repair strategies like, for example, search-based automated repair.

The student is to examine the current state of automated program repair with special focus on semantics based methods.

References


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