

Doctoral Thesis

"Adaptive Detection of Design Flaws"

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Abstract

Criteria for software quality measurement depend on the application area. In large software systems criteria like maintainability, comprehensibility and extensibility play an important role.

My aim is to identify design flaws in software systems automatically and thus to avoid "bad" — incomprehensible, hardly expandable and changeable — program structures.

Depending on the perception and experience of the searching engineer, design flaws are interpreted in a different way. I propose to combine known methods for finding design flaws on the basis of metrics with machine learning mechanisms, such that design flaw detection is adaptable to different views.

This thesis presents the underlying method, describes an analysis tool for Java programs and shows results of a case study.

Keywords

Design flaw, code smell, object-oriented design, software quality, refactoring, program analysis, and machine learning.